REPORT RESUMES

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OPEN SYSTEM THEORY AND CHANGE IN VOCATIONAL PROGRAMS OF IDAHO SECONDARY SCHOOLS.

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THE DECISION-MAKING PROCESS OF SUPERINTENDENTS AS RELATED TO THE SYSTEM THEORY OF ADMINISTRATIVE CHANGE WAS THE CENTRAL FOCUS OF THIS STUDY. SPECIFIC OBJECTIVES WERE (1) TO ANALYZE SUPERINTENDENTS' DECISION MAKING AS RELATED TO MODIFYING AND INITIATING VOCATIONAL EDUCATION PROGRAMS IN IDAHO, (2) TO TEST A THEORY OF ADMINISTRATIVE CHANGE AS RELATED TO VOCATIONAL EDUCATION, AND (3) TO DETERMINE CONDITIONS IN WHICH VOCATIONAL EDUCATION CHANGE IS LEAST AND MOST LIKELY TO OCCUR. INTERVIEWS WERE CONDUTED WITH 50 SCHOOL SUPERINTENDENTS RANDOMLY SELECTED FROM SCHOOL DISTRICTS LOCATED IN THE SIX JUNIOR COLLEGE DISTRICTS OF IDAHO TO TEST FOUR PROPOSITIONS TO PREDICT CONDITIONS TENDING TO INHIBIT CHANGE AND THREE TENDING TO AID CHANGE. RELATIONSHIPS AMONG PROPERTIES AD PROPOSITIONS OF THE OPEN SYSTEM THEORY OF ADMINISTRATIVE CHANGE INDICATED THAT (1) STEADY STATES OF SYSTEMS ARE ACCOMPANIED BY INCREASED HIERARCHY, (2) PROGRESSIVE DEPARTMENTALIZATION SEEMS TO ACCOMPANY THE INTERPLAY OF SUBSYSTEMS IN SUCH A WAY AS TO INDUCE CHANGE, (3) DISTRICTS ENCOURAGING DYNAMIC INTERPLAY ARE MORE LIKELY TO EMPLOY OUTSIDE SUPERINTENDENTS AND SUPPORT HIS EFFORTS FOR CHANGE, AND (4) SCHOOLS WITH INTERNAL FEEDBACK SYSTEMS ARE MORE LIKELY TO RESPOND TO THAN RESIST STRONG OUTSIDE PRESSURES. A CONCLUSION IN DIRECT OPPOSITION TO THE THEORY PREDICTIONS STATED THAT THE MORE HIERARCHICAL THE STRUCTURE OF AN ORGANIZATION AND THE MORE FUNCTIONAL THE DYNAMIC INTERPLAY BETWEEN SUBSYSTEMS, THE GREATER THE PROBABILITY OF VOCATIONAL PROGRAM CHANGE. A BIBLIOGRAPHY AND STATISTICAL DATA ARE INCLUDED. (DM)

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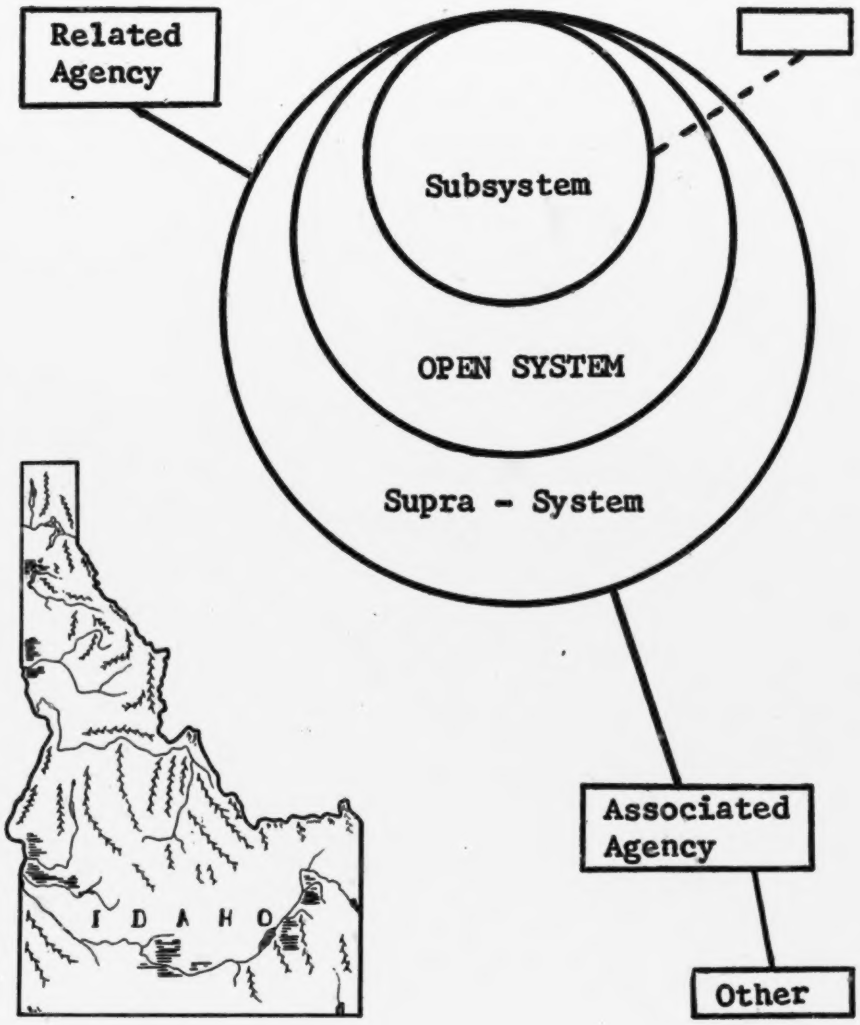
Open System Theory And Change In Vocational Programs Of Idaho Secondary Schools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OPEN SYSTEM THEORY AND CHANGE IN VOCATIONAL PROGRAMS OF IDAHO SECONDARY SCHOOLS

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FOREWORD

The research reported in this publication represents an attempt to apply open system theory to change in programs of vocational education in Idaho secondary schools. The study was exploratory in nature, and has more potential for encouraging and directing additional research than for immediate practical application.

This is the first publication of the State Occupational Research Unit which represents a change in emphasis in the Unit's research program. Heretofore, research projects conducted or sponsored by the Unit have been designed to answer practical questions or for immediate practical application of the findings. Early in 1967, the Unit staff decided to place some emphasis on theoretical studies and projects which would have implications beyond an immediate practical situation. At least two additional theoretical studies are underway in the Unit at this time, and others are planned in the future. Future publications will contain the results of studies in career choice and development, and possibly in the area of interest measurement.

Mr. Robert J. Heger, Research Fellow with the Unit during the 1966-67 term and the first half of the 1967-68 term, is commended for his efforts during the conduct of this study. Mr. Heger used the results for his own program of study toward the doctorate, but was careful to keep the design and conduct of the project congruent with the overall purposes and objectives of the Unit's research program.

ACKNOWLEDGEMENTS

The author is indebted to many people for the completion of this project. First, he wants to thank his major professor, Dr. Donald L. Duncanson, for his personal and professional counsel. This includes his recommendation of a theoretical study.

The cooperation of the author's doctoral committee members is greatly appreciated. These gentlemen, namely: Professors Rex M. Collier, Kenneth M. Loudermilk, Donald W. Seelye, Robert H. Shreve, and Dr. Duncanson, constantly expressed or implied confidence in the author's ability. This reassuring factor will never be forgotten.

The indebtedness of the author is extended to Dr. Loudermilk and Robert W. Richman, Director and Assistant Director, respectively, of the State Occupational Research Unit, University of Idaho. The author was assigned to the Unit as a University Research Fellow, and was permitted to develop and pursue the research reported in this dissertation as part of his work assignment. Dr. Loudermilk, Mr. Richman, and Dr. Duncanson cooperated in the design of the study; Mr. Richman assisted in all phases. Special mention is due to the Unit's secretary, Mrs. Bobbie Wolf, for her unselfish, diligent assistance on all clerical phases of the project.

Lastly, the author reserves special recognition for his wife, Joan. Without her encouragement, understanding, and assumption of the role of breadwinner, the completion of the author's doctoral program very likely would have remained wishful thinking.

Robert J. Heger

TABLE OF CONTENTS

CHAPTER PAGE

I. THE PROBLEM AND DEFINITION OF TERMS USED 1

The Problem 1

Statement of the problem 1

Importance of the study 1

Definition of Terms Used 3

Administration 3

Change 3

System 3

Theory 4

Vocational education 4

Vocational education program 4

II. REVIEW OF THE LITERATURE 5

Historical Background 5

Early apprenticeship programs 6

The effects of mechanics' institutes on the apprenticeship programs 7

The academies 8

Change in manpower needs 8

Federal assistance 9

Specific Federal legislation 10

Idaho's vocational education financial summary 12

Idaho's future vocational educational program 14

CHAPTER PAGE

Industrial Background 14
  Changing industrial groups 15
  Effects of manpower change in Idaho 17
  General shift in employment opportunities 17
  Changing occupational needs of students 18
  Effects of industrial change on the superintendent's responsibility 18
Theoretical Background 19
  Scientific versus artistic administration 19
  Patterns leading to theories 19
  Function of theory 20
  Practicality of theory 21
  Inductive reasoning and theory 21
  Characteristics of a theory 22
  The diminishing gap between educational theory and practice 23
System Theory Background 23
  System theory 24
  Properties of the organismic system theory 24
  Theory of administration change 26
  Propositions in theory of administration change 28
Summary 28
  Summary of historical background 28
  Summary of industrial background 29

CHAPTER PAGE

Summary of theoretical background 29

Summary of system theory background 30

III. METHODOLOGY AND DESIGN OF THE STUDY 31

The Population 31

The Sample 32

Data Collection Instrument 32

Development of the Interview Instrument 33

Delimitation 33

Structure and format 34

Question development 34

General method of scoring questions 34

Categories in the instrument 35

Pilot interviews 35

The Interview Procedure 36

Interviewers 36

Verification of interviewer's business affiliation . . 37

Telephone procedure to arrange for interviews 37

Introductory comments to superintendents at time of interview 38

Reference and response cards 39

Design of the Review Interval card 39

Use of the Review Interval card 39

Design of the General Four-Point Scale card 41

Use of the General Four-Point Scale card 41

CHAPTER PAGE

Design of the Subject Areas Included in the Vocational Education Program card 41

Use of the Subject Areas Included in the Vocational Education Program card 41

Attitude of superintendents toward interview card . . . 42

The Statistical Analysis 44

Comparing properties and propositions with each other and with vocational program change by use of the chi-square technique 44

Adequacy of analysis 45

Summary 45

IV. RELATIONSHIP BETWEEN PROPERTIES AND SCHOOL DISTRICT STRUCTURE 47

Aspects of Change in School Districts 47

Structure and properties 48

Discussion and Quantification of Properties 48

Accuracy of statements of measure 48

Method of rating statements of measure 49

Method of rating properties 50

Discussion of Open System Properties 50

Property 1 51

Measurement of property 1 51

Questions for property 1 51

Method of rating property 1 52

CHAPTER PAGE

Property 2 53

  Measurement of property 2 53

  Questions for property 2 53

  Method of rating property 2 53

Property 3 55

  Measurement of property 3 55

  Questions for property 3 55

  Method of rating property 3 56

Property 4 56

  Measurement of property 4 56

Property 5 56

  Measurement of property 5 56

  Questions for property 5 57

  Method of rating property 5 57

Property 6 58

  Measurement of property 6 58

  Question for property 6 58

  Method of rating property 6 58

Property 7 58

  Measurement of property 7 58

  Questions for property 7 59

  Method of rating property 7 60

Summary 61

V. RELATIONSHIP BETWEEN PROPOSITIONS AND SCHOOL DISTRICT CHANGE 62

CHAPTER PAGE

Aspects of Change in Vocational Education Programs . . . 62

Conditions and propositions 63

Quantification of Propositions Covering Conditions Tending to Inhibit Change 63

Proposition 1 63

Measurement of proposition 1 63

Questions for proposition 1 64

Method of rating proposition 1 64

Proposition 2 65

Measurement of proposition 2 65

Questions for proposition 2 66

Method of rating proposition 2 67

Proposition 3 67

Measurement of proposition 3 67

Questions for proposition 3 68

Method of rating proposition 3 69

Proposition 4 69

Measurement of proposition 4 69

Proposition 5 70

Measurement of proposition 5 70

Questions for proposition 5 70

Method of rating proposition 5 70

Quantification of Propositions Covering Conditions Tending to Aid Change 71

CHAPTER PAGE

Proposition 6 71

Measurement of proposition 6 71

Question for proposition 6 72

Method of rating proposition 6 72

Proposition 7 72

Measurement of proposition 7 72

Questions for proposition 7 73

Method of rating proposition 7 74

Change as Represented by Interview Instrument Question 15 76

Purpose of question 15 76

Statement of question 15 77

Method of rating question 15 77

Summary 78

VI. RESULTS OF THE STUDY 79

Relationship Between Vocational Program Change and Properties of the Open System Theory 80

Relationship Between Vocational Program Change and Properties of the System Theory of Administrative Change 82

Relationship Between Each Property of Openness and Each Proposition of Administrative Change 84

Summary 91

VII. SUMMARY, CONCLUSIONS, AND RECOMMEDATIONS 92

Report on the Hypotheses Tested 93

CHAPTER PAGE

Null hypotheses regarding vocational program change and properties of the open system theory 93

Null hypotheses regarding vocational program change and propositions of the system theory of administrative change 94

Null hypotheses regarding properties of the open system theory and propositions of the system theory of administrative change 96

Conclusions Regarding General Relationships Between Various Investigated Factors 97

The categorical patterns of the investigated properties of the open system, as a group, and the reported vocational program changes, as a group, do not vary systematically 97

The categorical patterns of the investigated proposition of the system theory of administrative change as a group, and the reported vocational program changes, as a group, do vary systematically 97

The categorical patterns of the investigated properties of the open system theory, as a group, and the categorical patterns of the investigated propositions of the system theory of administrative change, as a group, do not vary systematically 98

Implications and Recommendations for Future Study . . . 99

Properties related to change 99

Propositions related to change 100

Properties related to propositions 102

CHAPTER PAGE

Summary 105

BIBLIOGRAPHY 108

APPENDIX 112

Exhibit A 113

Exhibit B 115

Exhibit C 116

Exhibit D 119

Exhibit E 120

Exhibit F 121

Exhibit G 122

Exhibit H 123

Exhibit I 124

Exhibit J 125

Exhibit K 128

Exhibit L 131

LIST OF TABLES

TABLE PAGE

I. Summary of Expenditures and Sources of Funds for Vocational Education, July 1, 1964, to June 30, 1966 13

II. Rating for Composite Standard Operating Procedures 55

III. Range of Independence of Sub-Systems 60

IV. Independence of Meetings Percentage Ratings 61

V. Superintendents' Tenure Rating 71

VI. Extent of Supra-System Rating's 76

VII. Number of Major Changes Ratings 77

VIII. Test of Independence Between Vocational Program Change and Each of the Properties of the Open-System Theory . . 81

IX. Test of Independence Between Vocational Program Change and Each of the Propositions of the System Theory of Administrative Change 83

X. Test of Independence Between Property 1 and Each of the Tested Propositions 85

XI. Test of Independence Between Property 2 and Each of the Tested Propositions 86

XII. Test of Independence Between Property 3 and Each of the Tested Propositions 87

XIII. Test of Independence Between Property 5 and Each of the Tested Propositions 88

XIV. Test of Independence Between Property 6 and Each of the Tested Propositions 89

TABLE PAGE

XIV. Test of Independence Between Property 6 and Each of the Tested Propositions 89

XV. Test of Independence Between Property 7 and Each of the Tested Propositions 90

XVI. Summary of Significant Relationships Between Properties, Propositions and Vocational Program Change 104

XVII - XXIII. Contingency Tables for Vocational Program Change and Properties 125

XXIV - XXX. Contingency Tables for Vocational Program Change and Propositions 128

XXXI - LXXII. Contingency Tables for Properties and Propositions 131

LIST OF FIGURES

FIGURE PAGE

1. Industries Providing Services Offer More Jobs Than Those Providing Goods 15

2. Employment Has Shifted Toward White Collar Occupations 17

3. Griffiths' Model for a Theory of Administration Change in an Open System 27

4. Cases in Which Outside Impetus Was Reported in Response to Interview Question 21 124

CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS USED

Vocational education programs in the public schools are presently being confronted with a dynamic force for change that is geared to technological advancements and the subsequent needs of the labor force. Major changes in vocational education programs are common occurrences. The causes for these changes are not only due to the need to keep pace with industrialization and automation, they are also due to the financial opportunity made available through Federal financing to facilitate program change. Thus, vocational education programs, commonly viewed as static carry-overs from the Industrial Revolution, are being molded to assume the new functions and challenges of the Space Age.

I. THE PROBLEM

Statement of the problem. The purposes of this study are: (1) to analyze the decision-making process of school superintendents, especially as this process relates to the modification and/or initiation of vocational education programs, in the state of Idaho; (2) to test a theory of administrative change as it relates to vocational education; (3) to determine those conditions in which vocational education program change is least likely to occur; and (4) to determine those conditions in which vocational education change is most likely to occur.

Importance of the study. Vocational education has constantly undergone change since its earliest recorded history. The United States has recognized the need for facilitating change aimed towards improvement, and has responded with vast amounts of financial aid. Primarily through Federal aid, Idaho is currently undergoing the greatest vocational education change in the history of the state. These changes greatly affect various segments of the populace of Idaho, i.e., students and citizens of various communities, and taxpayers in general. Industry is also affected by these changes.

Since the responsibility for the realistic initiation of vocational education change rests upon the superintendents of the individual school districts, a study to facilitate decision-making is most important. Also, every year in Idaho, millions of tax dollars are spent on vocational education programs that affect thousands of students. Ultimately, even within a given year, the product of this investment helps to shape the social and economic conditions of the state.

Current change in vocational education is most often based on a description of what has happened or what is presently happening relative to industrial manpower needs. This is a descriptive basis. To a lesser degree, such change is based on analysis of what has or is presently happening. This is an explanatory basis. The least frequently used basis for change is the attempt to foretell what the industrial manpower needs will be that will ultimately affect a changing vocational education program. This is a prediction basis.

It is commonly recognized that the scientific process of prediction employs some type of theorizing, a process which is implicit in the decision-making process of school administrators. This study will investigate a theoretical approach to the process of decision-making to examine the practicality of employing theory. Also, this study will attempt to demonstrate that theory-based decision-making is an indispensable tool of prediction. The practicality of theory is dicussed in Chapter II.

II. DEFINITION OF TERMS USED

Administration. The term administration is used to mean ". . .the process (cycle of events) engaged in by members of a social organization in order to control and direct the activities of the members within the organization."[1] This is not to say that all members of the formal organization do not participate in administration, but rather to indicate that administration is primarily related to persons charged with the responsibility of maintaining the organization as a functioning unit.

Change. The term change is used to mean a major alteration in the policies, structure, objectives, or the procedures of the vocational education program as related to any given school district.

System. The term system is used to mean:

> . . .any recognizable delimited aggregate of dynamic elements that are in some way interconnected and interdependent and that continue to operate together according to certain laws and in such a way as to produce some characteristic total effect.[2]

A system, then, is related to a particular activity, i.e., school administration, which maintains integration and unity. A system may be dynamically related to another system, i.e., local school administration related to county administration, but the two systems can be distinctly recognized.

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[1] Daniel E. Griffiths, Administrative Theory (New York: Appleton-Century-Crofts, Inc., 1959), p. 73.

[2] Ludwig von Bertalanffy and Anatol Rapoport (eds.), General Systems -- Yearbook of the Society for the Advancement of General Systems Theory (Ann Arbor: Braun-Brumfield, 1956), p. 18.

Theory. The term theory is used to mean:

> . . .a set of interrelated constructs (concepts), definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena.[3]

A theory is something that cannot be proven true or false, but rather, only valid (useful) or invalid (not useful). This is especially pertinent to the frequency of educational change for the inappropriate theory of today may become the useful theory of tomorrow.

Vocational education. The term vocational education is used to mean a high school program that is a segment of the total education program which prepares students for occupations requiring less than a baccalaureate degree. This definition is designed to conform to the broad definition of vocational education as outlined in the Vocational Education Act of 1963.[4]

Vocational education program. The term vocational education program is used to mean any one or more of the following seven areas, namely: technical education, agricultural education, business and office education, distributive education, industrial arts education, home economics, and trade and industrial education. The inclusion of these vocational education areas is supported by certain reviews of The Ohio State University's Center for Vocational and Technical Education.[5]

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[3] Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1964), p. 11.

[4] United States Statutes at Large 1963 (Washington: United States Government Printing Office, 1963), pp. 403-19.

[5] Center for Vocational and Technical Education, Review and Synthesis of Research in Agricultural Education; Business and Office Occupations Education; Distributive Education; Home Economics Education; Industrial Arts; Technical Education; Trade and Industrial Education; Seven reports prepared by The Center for Research and Leadership Development in Vocational and Technical Education (Columbus: The Ohio State University, August, 1966).

CHAPTER II

REVIEW OF THE LITERATURE

Much has been written on the history of vocational education and the changes in industrial manpower needs. However, there is a marked absence of literature relative to theory in vocational education decision-making. A knowledge gap exists in spite of the interrelation between the history of vocational education, the changes in industrial manpower needs, and theory in decision-making. The realization that vocational education is a multimillion dollar activity in the state of Idaho, makes the study of administrative change on vocational matters highly important. The purpose of this chapter is to review the literature in each of the aforementioned areas. This effort will, in turn, be of assistance in selecting research aimed at narrowing the knowledge gap.

I. HISTORICAL BACKGROUND

A look at the historical aspects of vocational education is helpful in developing an understanding of Idaho's vocational education program as it exists today and the changing program that can be expected in the future.

The historical section has been limited to include only the development of vocational education in the United States. Furthermore, early professional programs of apprenticeship, i.e., law, medicine, and clergy, have not been included. The reason for this limitation is that this study's main concern is high school vocational education programs.

For the historical background section of this chapter, two recognized authorities are used extensively as sources of reference: R. Freeman Butts[1], an educational historian, and Roy W. Roberts[2], a spokesman for vocational education.

Early apprenticeship programs. Roberts, in his discussion of the inception of vocational education in America, stated that:

> The early settlers came to colonial America for many reasons, but none came for education purposes. With few exceptions these settlers were satisfied with the educational programs of the mother country, and as a consequence the first schools of the New World were similar to those of the country from which the settlers came.[3]

Nevertheless, note that the schools of the New World did conduct apprenticeship programs suited to the peculiarities of the environment. It is difficult to review any colonial history without observing mention of an apprenticeship program. The fact that these apprenticeship programs did exist during the settlement of America attests to the importance placed upon vocational education during the era of settlement and colonization.

The apprenticeship program had a rather questionable introduction into the colonial public school system with the passage of many school laws in the middle of the seventeenth century. Butts discussed this fact when he stated that:

> Considerable debate has since arisen as to how important these laws were in laying the foundations of the American school

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[1] R. Freeman Butts, A Cultural History of Western Education (New York: McGraw-Hill Book Co., Inc., 1955).

[2] Roy W. Roberts, Vocational and Practical Arts Education (New York: Harper and Row Publishers, 1965).

[3] Ibid., p. 44.

> systems. Some believe that they set the legal precedent for the nineteenth century establishment of state systems of schools; others believe that they were merely tools by which the Calvinist Church made sure that its doctrine would be inculcated in all children. In any case, the important thing is that the state did establish its authority over education. . .
>
> The state in England was establishing its right to require vocational education through compulsory apprenticeship at the same time it required education in language and reading.[4]

It was not until the Industrial Revolution that the first major change in the vocational education apprenticeship program really began to take place. "The rapid development of power machinery and the increased demands for goods led to a greater demand for labor than could be met by apprenticeship."[5]

The effects of mechanics' institutes on the apprenticeship program. The forces set in motion by the manpower needs of the Industrial Revolution partly led to the decline of the apprenticeship program and development of the mechanics' institutes. An overview of the change is described by Butts:

> Responding to the interest of the rising commercial and trading classes early in the eighteenth century, many schoolmasters began to teach practical subjects that had greater and more direct vocational value than the classics.[6]

Thus, private and public schools known as lyceums, mechanics' institutes, technical institutes, manual-labor schools, corporation schools, and private trade schools became influential in the development of a different, more general education system.

An added decline of the apprenticeship program resulted from the manpower needs of the Industrial Revolution, in conjunction with the mechanics' institutes. It forced the apprenticeship program from under the personal guidance and instruction of the journeyman worker on the job.

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[4] Butts, op. cit., p. 251.

[5] Roberts, op. cit., p. 56.

[6] Butts, op. cit., p. 328.

The academics. While vocational education has always existed to some degree in the American education system, it played a submissive role to the Latin grammar school until the start of the eighteenth century. Butts describes the Latin grammar school as being essentially college preparatory, a proponent of the classical subjects, discriminatory against girls, and essentially aristocratic.[7]

Gradually the academics emerged out of the demands of the American people for a more practical education. The popularity and practicality of the academics supplied the impetus that brought about a change in the educational system. School programs were no longer limited in design to teaching the classics, but rather were broadened to more nearly meet the needs of the social situation.

Probably Franklin's Academy was the most noted. As early as 1743 Benjamin Franklin proposed to establish an academy which would allow students to take courses according to their occupational or professional aspirations.[8]

Change in manpower needs. America, as an industrial nation, has never remained in a socially static state for any considerable length of time. As industrial changes came about so did the manpower needs change.

Mobley clearly summarized the change in manpower needs when he stated that:

> The need for vocational education has changed as society itself has changed. The system of apprenticeship was adequate

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[7] *Ibid.*

[8] *Ibid.*, p. 330.

> until the late nineteenth century, when the technological and industrial development within the United States made the need for occupational instructions more apparent. During the early years of the twentieth century, a vocational-training system within the public schools became a necessity.[9]

Mobley's statement coincides with Butts in regard to the time and the reasons that vocational education was receiving wide acceptance into the public school system.[10]

Federal assistance. Vocational education received its first financially solvent establishment in the general education system through the passage of the Morrill Act of 1863.[11] This act established the land grant state college system for the promotion of agricultural and mechanical subject areas. Indirectly, the Morrill Act affected the vocational education development in the high schools. "Through the efforts principally of the land-grant colleges, about a dozen agricultural high schools had been established by the end of the (nineteenth) century."[12]

It is a popular idea that prior to the passage of the Morrill Act the Federal government made an analysis of the industrial manpower demands and recognized the value of vocational education. However, Kandel disputed this idea. His statement once again illustrates the questionable intentions underlying the impetus which legislation gave vocational education:

> Congress had before it no clear, well-considered educational project. Senator Morrill himself knew little of education. His

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[9] M. D. Mobley, "A Review of Federal Vocational Education Legislation," Theory Into Practice, III (December, 1964), p. 167.

[10] Butts, op. cit., p. 500.

[11] The Statutes at Large, Treaties, and Proclamations of the United States of America (Boston: Little, Brown and Company, 1863), XII, pp. 503-5.

[12] Butts, op. cit., p. 502.

> wish was 'to do something for the farmer.' The notion of a series of schools suited to the needs of the boys and girls from the farm had been many times suggested. His bill took this form not from any sound educational reasoning, but as being one of the most likely means by which something could be done for the farmers as a makeweight to the things done for other groups in the body politic.[13]

The passage of the Morrill Act is of particular importance to education in general because this brought about a transformation of thinking about governmental administration. Prior to the Morrill Act, education was left to the separate states. Thus, vocational education played an historical part in Federal financing of state education.

Specific Federal legislation. The acceptance and entrenchment of vocational education in general education programs having been reviewed, the historical development will now turn toward specific Federal legislation. The purpose of this approach is to focus on the unexpected financial vastness of Idaho's vocational education program.

One of the main objections raised by the critics of the Morrill Act was based on taking money from the Federal treasury for the support of state education. "They argued that once the doors of the Federal treasury were open for the promotion of educational projects in the separate states, the demands for such help would come in increasing volume."[14]

The history of vocational education alone has shown that Federal legislation promoting the subject has been enacted thirty-six times since the first passage of the Morrill Act in 1863.[15]

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[13] I. L. Kandel, Federal Aid for Vocational Education (Boston: The Merrymount Press, no date), p. v.

[14] Ibid.

[15] "Vocational Education and Junior College Education," California Education, III (June, 1966), pp. 16-17.

The major Federal acts which provide the fiscal structure of the existing vocational education programs are:

The Smith-Hughes Act (1917).[16] This act provides for vocational education appropriations to be used in the areas of trade and industry, homemaking, and agriculture. Each of these also provides for teacher training.

The George-Barden Act (Vocational Education Act of 1946).[17] This act provides for the flexible use of vocational education appropriations so as to include teacher training and vocational guidance if deemed appropriate by the state receiving such aid.

The Area Redevelopment and Training Act (1961).[18] A major provision of this act was to enable the Federal Government, together with the states, to help areas of substantial and persistent unemployment and underemployment to better plan and finance their redevelopment.

The Manpower Development and Training Act (1962).[19] This act expected to secure appropriate full time employment for those who did not have previous or needed training to upgrade their skills.

The Vocational Education Act of 1963.[20] This act was designed to (1) extend present programs and develop new programs of vocational education, (2) encourage research and experimentation, and (3) provide work study programs to enable students to continue in vocational education.

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[16] The Statutes at Large of the United States of America (Washington: Government Printing Office, 1917), XXXIX, pp. 929-936.

[17] United States Statutes at Large 1946 (Washington: United States Government Printing Office, 1946), 60, pp. 775-8.

[18] United States Statutes at Large 1961 (Washington: United States Government Printing Office, 1961), 75, pp. 47-63.

[19] United States Statutes at Large 1962 (Washington: United States Government Printing Office, 1962), 70, pp. 23-33.

[20] United States Statutes at Large 1963 (Washington: United States Government Printing Office, 1963), pp. 403-19.

Idaho's vocational education financial summary. Idaho's annual vocational program is a multimillion dollar business. Table I on the following page is offered as a summary of the total expenditures and sources of funds for Idaho's vocational education program. The 1964-66 biennium was selected to illustrate the vast financial picture of Idaho's vocational education program.

TABLE I

SUMMARY OF EXPENDITURES AND SOURCES OF FUNDS FOR VOCATIONAL EDUCATION, July 1, 1964 to June 30, 1966.[21]

	1964-65	1965-66	Biennium
REGULAR PROGRAM			
George-Barden..................	$ 333,375.00	$ 328,315.00	$ 661,690.00
Smith-Hughes..................	39,430.00	39,430.00	78,860.00
Vocational Act of 1963..........	505,465.00	740,817.50	1,246,282.50
Total Federal Funds..........	878,270.00	1,108,562.50	1,986,832.50
State Funds.................	697,136.04	631,557.80	1,328,282.50
Total Voc. Ed. Dept. Funds.........	$1,575,406.04	$1,740,120.30	$3,315,526.34
State Building Funds............	-0-	50,000.00	50,000.00
Boise Junior College............	8,882.18	101,233.53	110,116.34
College of Southern Idaho.......	-0-	30,820.45	30,820.45
Idaho State University..........	7,814.18	11,375.00	19,659.50
North Idaho Junior College......	3,774.96	1,375.00	5,149.96
University of Idaho............	27,252.24	29,280.45	56,532.69
Local School Districts..........	782,215.58	980,084.45	1,762,300.03
Total Other Funds (Individual Institutional Voc. Ed. Funds)	$ 829,939.77	$1,204,639.20	$2,034,578.97
TOTAL REGULAR PROGRAM.............	$2,405,345.81	$2,944,759.50	$5,350,105.31
OTHER PROGRAMS: (100% Federal Funds)			
Area Redevelopment..............	$ 2,585.95	$ 1,250.34	$ 3,836.29
Manpower Development...........	185,565.00	218,874.02	404,439.02
TOTAL OTHER PROGRAMS..............	$ 188,150.95	$ 220,124.36	$ 408,275.31
GRAND TOTAL ALL PROGRAMS...........	$2,593,496.76	$3,164,883.86	$5,758,380.62

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[21] *Biennial Report of the Idaho State Board for Vocational Education for the Biennium 1964-66* (Submitted by the Director for the State Board for Vocational Education), p. V-25.

Idaho's future vocational education program. In direct reference to the future vocational education program in Idaho, the 1964-66 Idaho Biennial Report included in part the statement that:

> Youth and adults in the State of Idaho must compete with skilled workers from all parts of the nation for job opportunities both in state and out. Trade and technical education in Idaho must continue to be developed in the area vocational schools and high schools to meet the needs of the youth who want preparatory training and the adult worker who needs extension of supplementary training which will assist them to develop and maintain an occupational competency in industry.[22]

This section of the report is concluded by also stating recommendations that the vocational education program should cover in order to meet the needs of Idaho's present and future work force.[23] These guidelines state that the area vocational schools must continue to offer a broad program in trade and technical education to all persons in the state who can benefit from such training; vocational programs must maintain a balance between the semi-skilled, skilled, and technical course offerings; vocational instruction must be improved through upgrading curriculum and teacher training; quality curriculum must be maintained in view of industrial needs; and all vocational guidance and counseling services must be improved and expanded.

II. INDUSTRIAL BACKGROUND

Choosing a vocation is one of the most important decisions a person makes in his lifetime. And since it is the responsibility of the school to assist the student in preparing for a vocation, the school must assess the fields of work that will offer students employment opportunities. This section of the discussion will provide information on occupational changes that should be taken into consideration by the administrative decision-makers of the schools. This will enable the schools to provide vocational education programs that are geared to industrial manpower needs.

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[22] Ibid., p. V-52.

[23] Ibid.

Changing industrial groups. The major industrial manpower groups are changing just as industry itself is changing. An illustration of how these groups have been changing is provided by Figure 1. This figure is adapted from a Bureau of Labor Statistics report.[24]

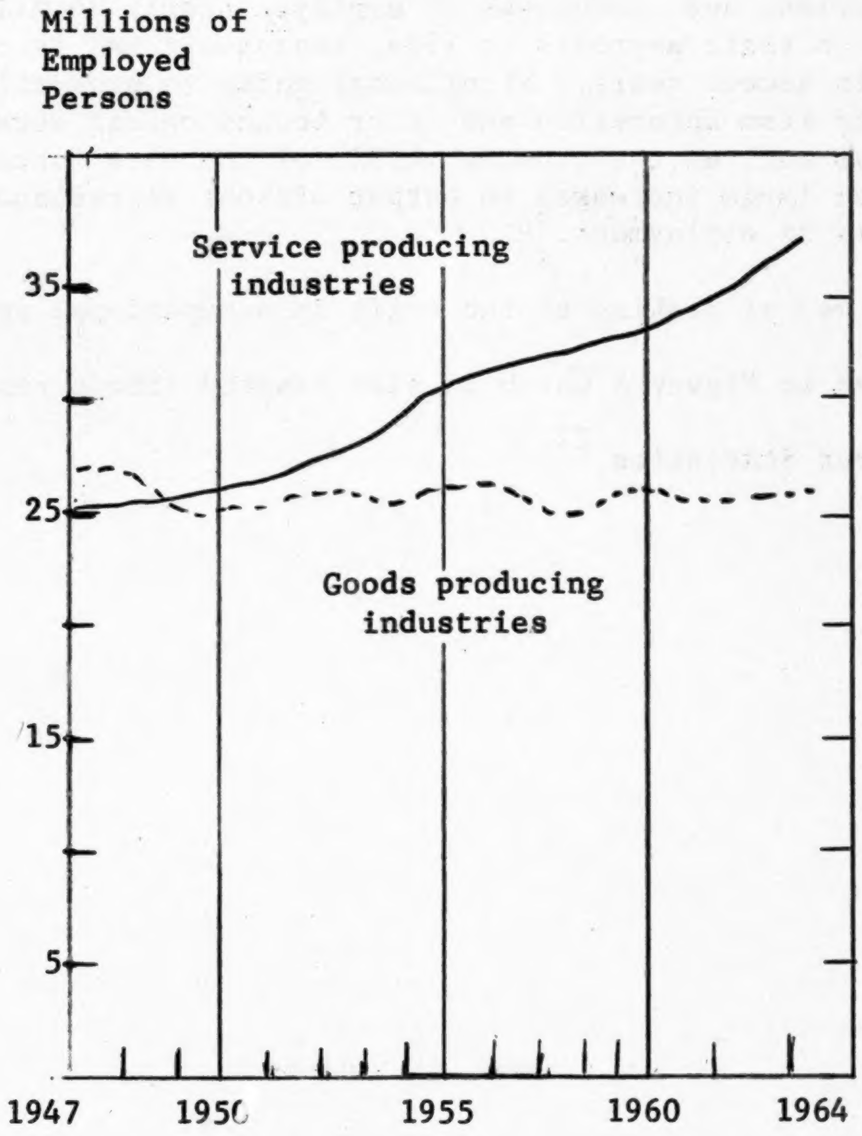

FIGURE 1

INDUSTRIES PROVIDING SERVICES OFFER MORE JOBS THAN THOSE PROVIDING GOODS

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[24] United States Department of Labor, Occupational Outlook Handbook, Bulletin No. 1450 (Washington: Government Printing Office, 1966-67 Ed.), p. 12.

The service-producing industries include the following kinds of businesses: transportation and public utilities, trade, finance, insurance, real estate, service, government, and miscellaneous.[25]

The goods-producing industries include the following kinds of businesses: manufacturing, contract construction, mining, and agriculture.

The United States Department of Labor summarized the change in industry and industry and industrial groups when it stated that:

> Among the goods-producing industries--manufacturing, construction, and mining--which employed nearly 26 million workers on their payrolls in 1964, employment has increased slowly in recent years. Significant gains in productivity, resulting from automation and other technological developments, as well as the growing skills of the work force have permitted large increases in output without corresponding increases in employment.[26]

Another way of looking at the shift in occupational opportunities is illustrated in Figure 2 which is also adapted from a report of the Bureau of Labor Statistics.[27]

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[25] *Ibid.*

[26] *Ibid.*, p. 15.

[27] *Ibid.*

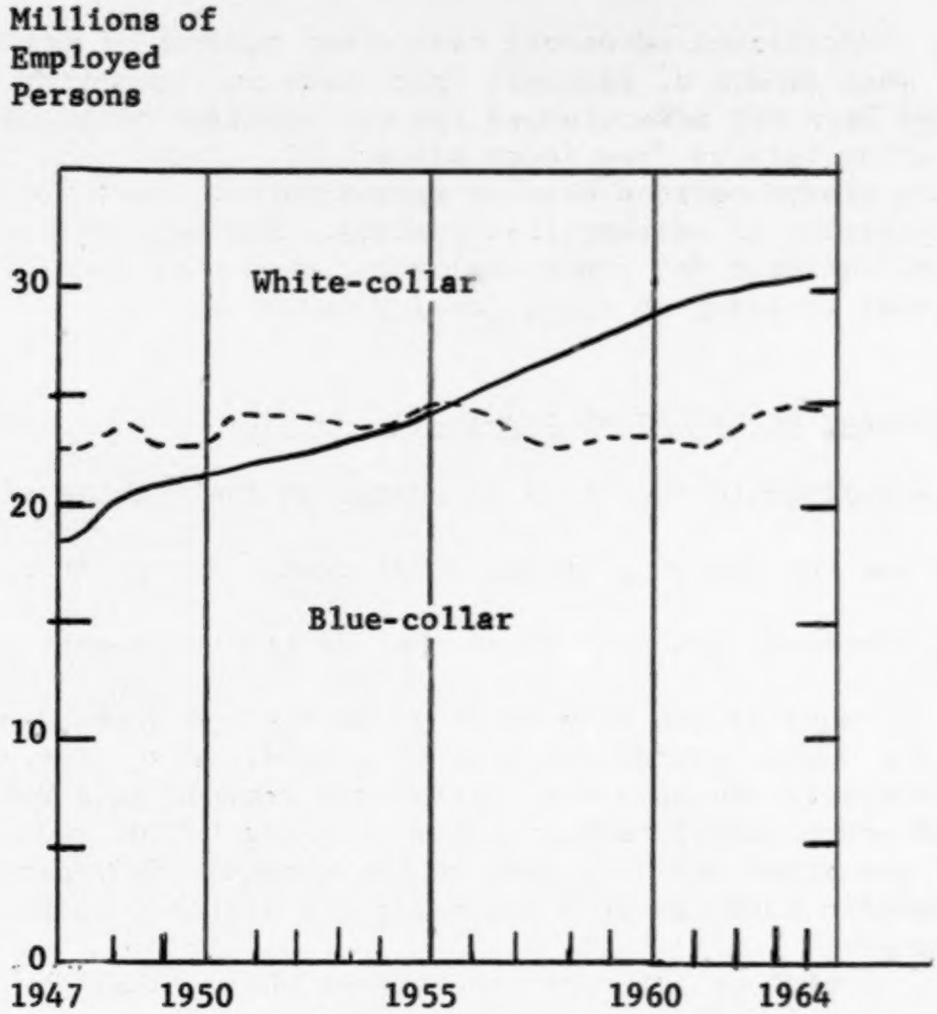

FIGURE 2

EMPLOYMENT HAS SHIFTED TOWARD WHITE-COLLAR OCCUPATIONS

Effects of manpower change in Idaho. Idaho, being an agriculturally dependent state, is no exception to the decrease in blue-collar occupations. While 19.8 per cent of Idaho's Civilian Labor Force is agriculturally employed, this employment has decreased 28.6 per cent between 1950-64.[28]

General shift in employment opportunities. The Assistant Director of the Manpower Administration, U. S. Department of Labor, clearly indicated his concern with shifting employment opportunities when he stated that:

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[28] The State Occupational Research Unit, Employment Trends in Various Industries 1950-64 (Moscow: The University of Idaho, 1966), p. 5.

> Vocational educators have never squarely faced the issue of mass exodus of manpower from farms in the United States. They have not acknowledged the net transfer of almost 25 million persons from farms since 1940. Today, the number of farm reared persons make up approximately one-third of the total population in metropolitan centers. How many of these persons were equipped for urban employment when they were given vocational training in their local communities?[29]

Changing occupational needs of students. One of the factors that strongly influenced the study of change in the vocational education program was the changing occupational needs of high school students. Rosen elaborated upon this point when he stated in part that:

> . . . many of the changes required for new directions can only occur under painful and wrenching conditions. Teachers and educatiors who have been raised and trained in a rural environmen cannot easily adjust their thinking to the requirements of the urban world of fast moving change. Many persons with specific interest will argue for the status quo and resist change.
>
> I want to point out that those who will suffer the most from our inability to adjust to change will be the youngsters we educate and train . . . . The real purpose is our concern for our future citizens. The stakes we are discussing are far higher than vocational . . . . programs. The stakes are too important to let personal bias and involvement influence decisions and directions.[30]

Effects of industrial change on the superintendent's responsibility. Since the vocational education program is an integral part of the total educational program of the school, it is the responsibility of the superintendent to face the changing issues of our industrial society as they relate to the vocational education program. Conant brought this point into focus when he stated in part that:

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[29] Howard Rosen, "Manpower and Labor Economics: Implications for Guidance in Vocational-Technical Education" (paper read at a National Inter-Disciplinary Seminar, "Guidance in Vocational Education: Guidelines for Research and Practice," the Ohio State University, January 12, 1966). p. 6.

[30] *Ibid*., p. 7.

> The school administration should constantly assess the employment situation in those trades included in the vocational programs. When opportunities from employment in a given trade no longer exist within the community, the training program in that field should be dropped. The administration should be ready to introduce new vocational programs as opportunities open in the community or area.[31]

III. THEORETICAL BACKGROUND

One of the principles of this study is to examine the decision-making process of superintendents from a theoretical perspective. The underlying reason for this examination is to understand the decision-making process resulting from a scientific use of facts, as opposed to decisions guided primarily by intuition and experience. The main purpose of the theoretical background is to demonstrate the practicality of a theoretical approach.

Scientific versus artistic administration. Griffiths used the term "art" to designate practice based on intuition and experience.[32] He then indicated the relationship between practice based on science as opposed to practice based on art when he stated in part that:

> It is true at the present time, that no one could administer in a thoroughly scientific manner; and, indeed, it may be that no one will be able to administer in this way. On the other hand one should be able to do better than operate on the level of art.[33]

Patterns leading to theories. Kaplan provided a starting point for understanding theory, when he state that, "A theory is a way of making sense of a disturbing situation. . ."[34] In relating this statement to decision-making, the past happenings relative to decision-demand are not a matter of mere isolated happenings, but rather, a sequence of interrelated events that are meaningful to themselves. Furthermore, these events can be shown to contain some semblance of pattern. Out of this pattern a generalization is made, which in essence is the process of theorizing. Therefore, the facts of the case are considered prior to making a decision.

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[31] James B. Conant, The American High School Today (New York: McGraw-Hill Book Company, Inc., 1959), p. 52.

[32] Daniel E. Griffiths, Administrative Theory (New York: Appleton-Century-Crofts, Inc., 1959), p. 21.

[33] Ibid.

Thomas brought the foregoing concept into clear focus when he stated in part that:

> In the course of a scientific inquiry, any current stock of facts and laws is always inadequate to a complete set of explanatory relationships for the field. Some facts seem to hang together but others, on first inspection, appear quite unrelated. To get all these facts and laws into some comprehensive pattern, the scientist makes some shrewd guesses - some hypothesis, which potentially links disjunctive facts and laws into a constant system of mutual implication. This inclusive pattern of relationship, some hypothetical and some verified, constitutes a scientific theory.[35]

Function of theory. There is general acceptance as to the function of a theory. Simply stated, the primary function of a theory is to provide explanation and to allow for prediction. Thus, what a theory does is to reach beyond the relationship of mere facts. The related facts will describe a "disturbing situation" (problem), but a theory attempts to explain the problem and/or make a prediction based upon the original description.

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[34] Abraham Kaplan, *The Conduct of Inquiry* (San Francisco: Chandler Publishing Company, 1964), p. 295.

[35] Lawrence G. Thomas, "Mental Tests on Instruments of Science," *Psychological Monographs*, 54 (number 3, 1942), p. 12.

Practicality of theory. The question arises as to the practicality of theory. The editors of Educational Administration pointed out that administrators are constantly engaging in decision-making to achieve basic goals; their actions must have practical value.[36] They further stated in part that:

> You have heard the expression, 'That is good in theory, but will not work in practice.' That the theoretical and practical are antithetical has almost become one of the accepted beliefs of administrators. . . . Obviously, if theory works in the sense that it explains events in a wide number of situations and is a good predictor of events to follow, theory is practical. It is the most practical tool that the administrator can possess.[37]

Inductive reasoning and theory. Perhaps the best way to bridge the gap between the theoretical and the practical is to apply the inductive system of reasoning to the use and construction of theory. The classic statement of implication is appropriate: If P then Q. Particular note is to be made of the if - then relationship. In reference to this particular discussion, the if can be thought of as referring to the facts of the case; and the then can relate to a plausible outcome in terms of explaining or predicting.

Coladarci and Getzels illustrated this concept when they stated that:

> One searches for before-after relationships among the facts, observations, and events of everyday existence on the assumption that they are not independent, non-controllable events and that their future occurrence can be predicted and their past occurrence understood. Such a search, intelligently directed, yields hypotheses.[38]

Thus, when one uses the inductive principle, it is impossible to separate the facts from the explanation or prediction because one is dependent upon the other. For this reason, there can be no theory-practice dichotomy.

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[36] Walter G. Hack et al., Educational Administration (Boston: Allyn and Bacon, Incorporated, 1965), p. 55.

[37] Ibid., p. 56.

[38] Ibid., p. 59.

Those who reject theory as being impractical fail to realize that in any rational decision-making process, theorizing is undertaken as a basis for the decision. "Everyone who makes choices and judgments implies a theory in the sense there are reasons for his action."[39]

Dewey presented his belief in the practicality of theory when he stated in part that:

> Theory is in the end . . . the most practical of all things because the widening of the range of attention beyond nearby purpose and desire eventually results in the creation of wider and farther-reaching purposes and enables us to make use of a much wider and deeper range of conditions and means than were expressed in the observation of primitive practical purposes.[40]

Simply stated, a theory contains not only a set of interrelated facts, but a system of hypothetical propositions that have not been verified; and the verification thereof will offer far-reaching guides to further action.

Characteristics of a theory. Thomas has stated five major characteristics of an acceptable scientific theory that are pertinent to this discussion:

1. It should include all of the known facts and laws in the field of inquiry.

2. All facts, laws, and hypotheses must be logically deductible from the postulates of the theory.

3. It should predict and explain in advance possible laws not yet verified.

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[39] Ibid.

[40] John Dewey, Sources of a Science of Education (New York: Horace Liverright, 1929), p. 17.

4. These implied laws must be verifiable either directly (as existential generalizations) or indirectly by their indispensable power to solve scientific problems (as hypothetical constructs).

5. The simplest theory is likely to be the best theory.[41]

The diminishing gap between educational theory and practice. The more recent general concern of educators regarding the gap between theory and practice was summarized by Miller when he stated in part that:

> In essence, the heightened professional concern regarding educational change is the result of the increasing gap between what we know about good educational theory and practice and what is happening in our schools. The gap has always existed and no one is suggesting that it can be eliminated; but educators are becoming increasinly resistive about the width of the gap, and the tempo of search for way of decreasing it is picking up appreciably.[42]

IV. SYSTEM THEORY BACKGROUND

The purpose of this section is to state a theory of administrative change which tends to account for some of the commonly made observations relative to change in vocational education programs. Two basic questions are raised by the theory: (1) under what conditions will change in educational programs most likely occur; and (2) under what conditions is such change least likely to occur? In order to arrive at a procedure for answering these questions, two basic models are reviewed: (1) a model for the system theory as developed by Hearn,[43] and (2) a model for an administrative change theory as developed by Griffiths.[44]

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[41] Thomas, op. cit., p. 14.

[42] Richard Miller (ed.), "Some Current Developments in Educational Change," A Multidisciplinary Focus on Educational Change, in the Bulletin of the Bureau of School Service, XXXVIII, (Lexington: University of Kentucky, December 1955), pp. 7-8.

[43] Gordon Hearn, Theory Building in Social Work (Toronto: University of Toronto Press, 1958).

System theory. The current developmental state of system theory is duscussed in part by Hearn:

> Within recent years an interesting new connection has developed among a particular group of scientists. Representing fields as diverse as biology, physics, political science, and psychology, to mention a few, these scientists have become identified, now, as general system theorists. Apparently the principal factor which has drawn them together is a series of convictions which they share in common about theory and theory building. General systems theorists believe that it is possible to represent all forms of animate and inanimate matter as systems; that all forms from atomic particles through atoms, molecules, crystals, viruses, cells, organs, individuals, groups, societies, plants, solar systems, even the galaxies, may be regarded as systems.[45]

Hearn further indicates his concern with the duplication of research efforts.[46] He points out that it is not uncommon for scientists working in different fields to make congruent discoveries.

The general system theorist concludes that: (1) there are properties that are common to all systems even though they may take different forms, and that (2) there are universal laws which describe the structure and function of systems.

Properties of the organismic system theory. All systems have properties that are peculiar to themselves. The following nine properties are contained in Hearn's general discussion of an organismic system theory.[47] They are appropriate to understanding the system theory as it relates to this study.

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[44] Matthew D. Miles (ed.), Innovations in Education (New York: Teacher College, Columbia University, 1964).

[45] Hearn, op. cit., p. 38

[46] Ibid.

[47] Ibid., pp. 44-9.

1. Systems are either closed or open, the major difference being that closed systems are isolated from, whereas open systems are related to, and exchange matter with, their environment.

2. All systems, except the smallest have sub-systems, and all but the largest have supra-systems, which are their environments.

3. Open systems have inputs and outputs, that is, they exchange information with their environment.

4. Open systems tend to maintain a constant ratio among their components if given continuous inputs into the system. Thus, they maintain themselves in a steady state.

5. Open systems, following a disturbance, tend to re-establish themselves in a steady state similar to the original. Thus, they are self-regulating.

6. Open systems tend to achieve identical results from different initial conditions. Thus, they contain the phenomenon of equifinality, or they have the same ultimate results.

7. Open systems are self-regulating through the feedback process.

8. Open systems maintain their steady state by the dynamic interplay of sub-systems operating as functional processes; that is, no persistent conflicts are produced that cannot be resolved or regulated. Thus, they contain functional unity.

9. Open systems tend to divide into a hierarchial order of subordinate systems which gain a certain dependence on one another. Thus, they display progressive segregation.

Hearn summarized the properties of open or organismic systems when he stated in part that:

> There is a dynamic interplay among the essential functional subprocesses of sub-systems in the organismic system which enables it to maintain itself in a homeostatic steady state. Assuming a sufficient input of material from its environment, the organism develops toward a characteristic state despite initial conditions (equifinality). All of this is accomplished through an automatic self-regulatory process.[48]

Theory of administrative change. Griffiths proposed that system theory serve as a model for administrative change. The preceding properties, offered by Hearn, are in turn related to a school setting by Griffiths when the latter stated in part that:

> . . . any open system has supra-systems and sub-systems. Let an organization be considered as an open system, comprised of human interactions, that maintain a definite boundary. Further, consider administration as an open sub-system, and the environment as a supra-system. The administrative sub-system is located at the point of tangency of the three systems . . .[49]

Figure 3 is a model of Griffiths' concept.[50]

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[48] *Ibid.*, pp. 48-9

[49] Miles, *op. cit.*, p. 430.

[50] *Ibid.*

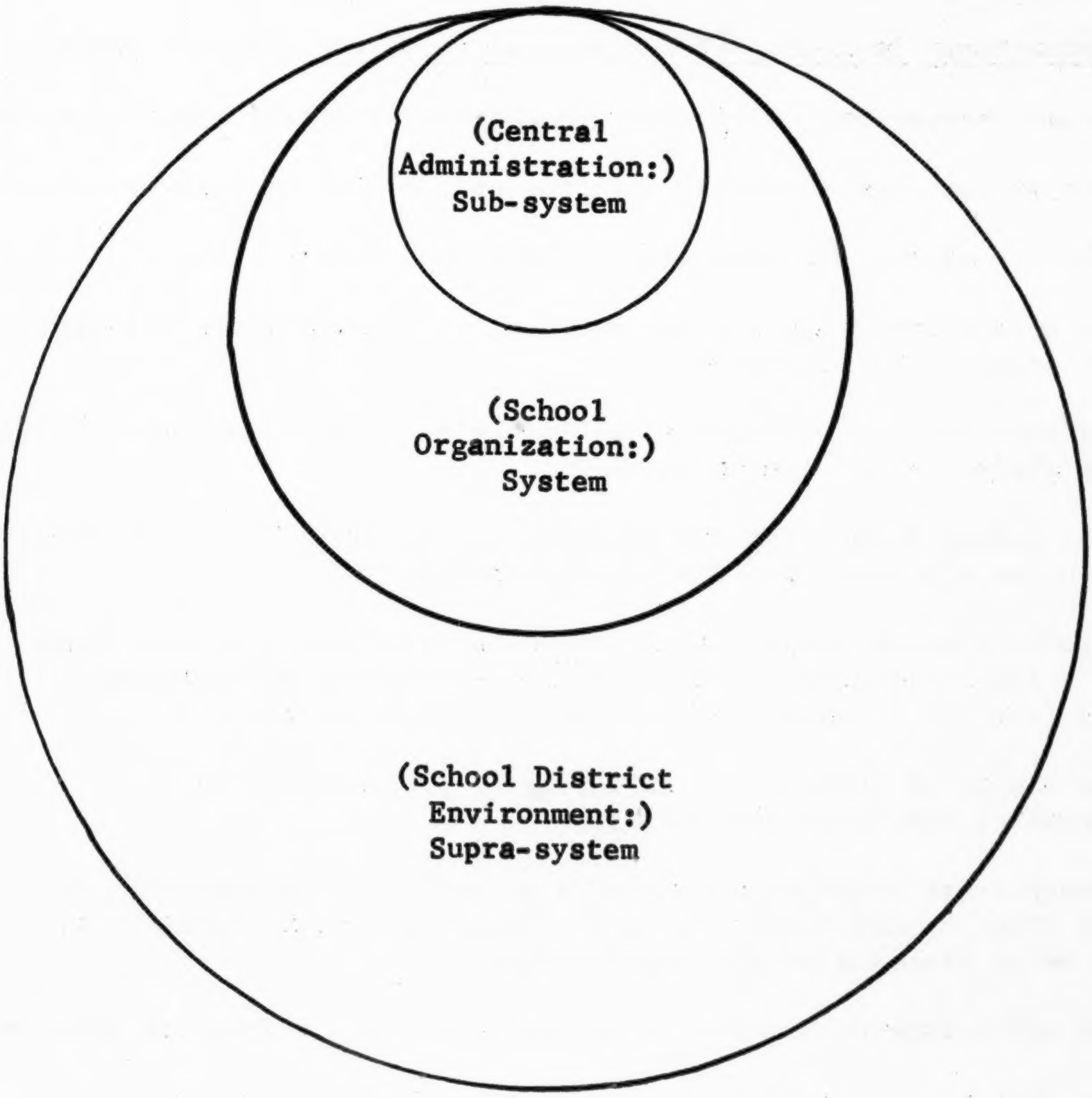
(Central
Administration:)
Sub-system
(School
Organization:)
System
(School District
Environment:)
Supra-system

FIGURE 3

GRIFFITHS' MODEL FOR A THEORY OF ADMINISTRATION CHANGE IN AN OPEN SYSTEM

In relating Griffiths' model to a practical school setting, Figure 3 illustrates that a school district is a system that exists with related sub-systems and supra-systems. The total system is comprised of human interactions within a definite boundary. The environment represents the school district which is the largest system of human interactions that Griffith considers. Existing within the school district (environment) is the system of human interactions occurring within the school (organization). Then, existing within the school, there is the system of human interactions occurring within the administration.

Propositions in theory of administrative change. On the basis of the systems' properties, Griffiths hypothesizes that any administrative change in an open system would be infrequent.[51] Out of this hypothesis Griffiths formulated the following eight propositions:

> The more hierarchial the structure of an organization, the less the possibility of change.
>
> The more functional the dynamic interplay of sub-systems, the less the change in an organization.
>
> When change in an organization does occur, it will tend to occur from the top down, not fron the bottom up.
>
> 'Living systems respond to continuously increasing stress first by a lag in response, then by an over-compensatory response, and finally by catastrophic collapse of the system.'
>
> The number of innovations is inversely proportional to the tenure of the chief administrator.
>
> Change in an organization is more probable if the successor to the chief administrator is from outside the organization, than if he is from inside the organization.
>
> The major impetus for change in organizations is from the outside.
>
> The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-system.[52]

V. SUMMARY

Summary of historical background. Vocational education received its start in America through the informal apprenticeship programs of the colonial settlers. The informality of these programs remained until the middle of the seventeenth century. It was not until this time that many school laws were passed which enabled the apprenticeship program to be formally introduced into the public school system. The first major change in the vocational education apprenticeship program began to take place during the era of the Industrial Revolution. Both private and public schools began to offer courses in the more practical subjects. The federal government has provided financial assistance to vocational education programs. This financing has assisted the states in changing their vocational programs to meet the demands of an industrial nation. There is a realization in Idaho that it must provide its youth and adults with a means to become skilled in those job areas which offer opportunities both in state and out.

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[51] Ibid., pp. 429-30.

[52] Ibid., pp. 431-35. (The above propositions are not in the order presented in Griffiths' discussion. The original order was modified for the experimenter's convenience in analysis.)

Summary of industrial background. It is the responsibility of the school to assist the student in preparing for a vocation. This task is difficult to achieve, however, because industrial manpower needs are in a state of change. Idaho, for example, is experiencing a decrease in blue-collar occupations. This kind of shift in employment opportunities has forced school superintendents to be faced with the responsibility of constantly assessing the employment situation in those trades included in the vocational programs.

Summary of theoretical background. Theories contain a pattern of interrelated events which may be either hypothetical or verifiable. The function of this relationship is to allow for explanation and prediction. The inductive system of reasoning is utilized to answer the question of theory practicality. This system illustrates that anyone who makes rational judgments, in a sense, employs theory. There is currently a professional concern for the need of applying theory to the operation of the school.

Summary of system theory background. Scientists have discovered evidence that suggests there are properties and laws common to all systems, Hearn presented nine properties that facilitate an understanding of open systems. This, in turn, led Griffiths to develop his model of administrative change. Griffiths was then able to hypothesize that change in an open system would be infrequent. Out of this hypothesis is listed a set of propositions which tends to aid or to inhibit change in organizations.

CHAPTER III

METHODOLOGY AND DESIGN OF THE STUDY

This study is primarily concerned with the concept that administrative decisions, which affect changes in a vocational education program, are generated from the total school district and its environment. The exploration of this concept has been facilitated by various properties and propositions of system theory as described by Griffiths. This chapter discusses the ways in which these properties and propositions have been analyzed in this study in order to offer a basis for explaining and predicting changes in vocational education programs.

I. THE POPULATION

The population of this study consisted of those school districts which had a "Superintendent," "Superintendent, Clerk," or "Superintendent, Treasurer," as listed in the 1966-67 Idaho Educational Directory.[1] The population did not include superintendents of elementary districts because these school districts would not have a vocational education program. Also excluded from the population were those school districts which did not designate a superintendent. The reason for these exclusions was that this study was primarily concerned with superintendents' decision-making processes related to vocational education programs. The school districts included in the population are listed on Exhibit A in the Appendix.

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[1] State of Idaho, Department of Education, Idaho Educational Directory: 1966-67 (Boise, 1966).

II. THE SAMPLE

The geographic area of the state of Idaho is divided into six junior college districts. The adequate representation of each geographic area was desired. Therefore, the study sample was randomly selected separately from those school districts located in each of the junior college districts. A fifty per cent sample was used, resulting in the inclusion of fifty-four school districts in the study. The school districts included in the sample are listed in Exhibit B in the Appendix. The random selection was obtained by a blind drawing of tags, each of which contained the number for a school district within a given junior college district.

III. DATA COLLECTION INSTRUMENT

The interview technique was used to obtain the data for this study. It was believed that the main advantages of the interview over other means of collecting data are as summarized below. This summary is from the general discussion of Selltiz, et al.:

(1) Interviews yield a much higher response than questionnaires.

(2) Interviews are flexible, thereby facilitating clarification.

(3) Interviews allow for the subject to speak more fully about an issue than he would write.

(4) Interviews allow for timely follow-up of ambiguous or contradictory statements.

(5) Interviews are appropriate for revealing information about complex subjects.

(6) Interviews allow for probing the sentiments that may underlie an expressed opinion.

(7) Interviews allow the "social atmosphere" to be varied, thereby facilitating responses.[2]

Other authorities[3] also suggest the interview to be the most feasible method of acquiring certain kinds of information, and the most effective method of gathering information that requires a personal response.

IV. DEVELOPMENT OF THE INTERVIEW INSTRUMENT

The interview instrument was developed with a carefully designed sequence of questions. These questions led from general subject information relative to the school district, to specific information relative to changes in the vocational education program. This structured sequence enabled the interview sessions to effectively achieve the basic interview objectives.

Delimitation. The format was designed to limit the discussion to certain properties and propositions. The specific aims of the interview format, in turn, are limited to the following two discussions: (1) a discussion of properties limited to those characteristics which distinguish an open system from a closed system: and (2) a discussion of propositions limited to certain organizational (school district) conditions which either inhibit or assist school district change.

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[2] Claire Selltiz, et al., Research Methods in Social Relations (New York: Henry Holt and Company, Inc., 1960), pp. 241-3.

[3] See, for example: Robert M. W. Travers, An Introduction to Educational Research (New York: The Macmillan Company, 1958), pp. 182-3; Stephen A. Richardson, et al., Interviewing: Its Forms and Functions (New York: Basic Books, Inc., 1965), p. 8; and Pauline V. Young, Scientific Social Surveys and Research (New York: Prentice-Hall, Inc., 1939), pp. 174-5.

The two aims mentioned above served as guidelines in two ways, namely: (1) the phrasing of the questions so that they would yield valid and reliable data, and (2) the quantifying of responses.

Structure and format. The interview instrument was designed to take advantage of desirable features of both the interview and questionnaire methods of gathering data. While many of the desired advantages of an interview, e.g., interview flexibility, were retained, a relatively short statement from the respondents was all that was required in order to obtain the necessary data for each question. The purpose in keeping the responses short was to give consideration to the respondents' time schedules, but not at the expense of having to compromise on obtaining accurate and consistent data.

Question development. During all phases of the question development, specific characteristics of both properties and propositions were kept in focus. The actual interview questions were developed from a combination of (1) independent work sessions by the staff of the State Occupational Research Unit, and (2) the Unit's staff engaging in brainstorming sessions with the major professor, staff members in the College of Education, and doctoral candidates in the College of Education.

The next phase of question development was to consider specific wording which would facilitate a scoring technique yielding accurate responses from those superintendents being interviewed. A concerted effort was made to avoid the wording of questions so they might slant any response.

General method of scoring questions. The scoring of the questions was guided by the comments of the above mentioned personnel and a statistics instructor in the College of Education. Travers also offers two main reasons for exercising control over the rating process.[4] These reasons are: (1) to clearly define the rating categories, and (2) to avoid any tendency by a respondent to simply rate situations as being "average." It was believed that there would be a tendency for superintendents to answer in a middle category in cases of indecisiveness. Therefore, it was decided that whenever possible an even four-point scoring scale would be used for marking purposes. In those questions which did not lend themselves to a four-point scoring scale, utilization was made of "Yes-No" or percentage responses. Detailed discussions of scoring procedures are included later in this chapter and in chapters IV and V.

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[4] Travers, op. cit., p. 175.

The final phase of question development involved a question-by-question analysis. Each statement of the interview instrument was traversed on successive critique sessions. Any item that did not withstand the critique of the aforementioned personnel was deleted. The more specific discussions of question development appears in Chapters IV and V.

Categories in the instrument. The items of the interview instrument were then grouped into two broad categories, namely: general school operations and vocational education programs. Each category of questions was then arranged in an inverted funnel sequence ranging from the most simple or least threatening, to the more complex, or to questions involving personal administrative preference. There was evidence that this sequence would draw out specific points in the most effective manner.[5]

Pilot interviews. Suggestions from the personnel working with the development phase of the interview led to a tentative interview instrument. This instrument was subsequently administered to a College of Education staff member who was a former Idaho superintendent, to a practicing superintendent, and to three doctoral candidates who were not previously involved with this study and who were either former assistant superintendents or superintendents. The suggestions from the respondents of the pilot interview phase were incorporated into a revised and shortened interview instrument. (A copy of the final instrument is shown in the Appendix as Exhibit C.) The results of the pilot interview phase indicated that the questions were unambiguous and valid. The questions also measured the degree to which a property was present.

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[5] Robert L. Kahn and Charles F. Cannell, *The Dynamics of Interviewing* (New York: John Wiley and Sons, Inc., 1957), p. 160.

V. THE INTERVIEW PROCEDURE

Since the superintendent of a school district is an executive, it was reasoned that he would most likely function in a traditional business manner. Therefore, a direct businesslike approach was used in every phase of the interview process from the original arrangement of the interview, to close adherence to the time limitation set by the superintendent being interviewed. Every consideration was give to making the interview session appealing to the superintendent, while at the same time the interviewer was reasonably assured of obtaining the necessary data.

Interviewers. Only two interviewers were involved in the actual field interviewing, namely: the researcher and the assistant director of the State Occupational Research Unit. These interviewers had been members of an interviewing team for an earlier study of the Unit for Idaho, were involved with all phases of the interview instrument development, and shared office space within the Unit office. The latter relationship provided the interviewers with the opportunity to engage in role playing the parts of interviewer and respondent. Thus a high degree of interviewing consistency was achieved in advance by the two interviewers.

Verification of interviewer's business affiliation. A letter of introduction was furnished to the interviewer by the director of the State Occupational Research Unit. A copy of the letter may be found in the Appendix as Exhibit D. This letter was to serve as verification of the interviewer's business affiliation. The other member of the interviewing team was the Assistant Director of the Unit. This interviewer used his regular business cards for any necessary introductory purposes. A copy of the business cards may be found in the Appendix as Exhibit E.

Telephone procedure to arrange for interviews. The arrangement for all interviews was by telephone appointments with the superintendents. The procedures for obtaining the interview appointments were the following:

The same person made all possible appointments. This procedure was followed to: assure consistency in presenting the topic to each superintendent, and to facilitate obtaining an interview appointment since the caller had acquired a familiarity with the general questions that the superintendents presented during the initial telephone contact.

The caller always asked for Mr. (superintendent's) secretary. The reasoning for this procedure was to assure all parties concerned that no links in the chain of command were being jumped. Also, in those cases in which the superintendent took the initial telephone call and did not immediately identify himself, it was nevertheless, the caller's impression that the superintendent was favorably impressed with the telephone protocol.[6]

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[6] Once the superintendent or his secretary was on the telephone, the caller introduced himself and his business in a manner which is essentially to the following: I am Robert Heger, representing the State Occupational Research Unit in Moscow. Our Research Unit is conducting a study in the area of vocational education. I would like to know if I could meet with Mr. (superintendent)/you on (day), during the (morning or afternoon) for about forty-five minutes. Our Research Unit would like to obtain his/your assistance in making it possible for the Unit to complete a research project in vocational education.

Also to be noted at this time, is that whenever it was not possible for the interviewer to meet a prearranged interview appointment, another telephone call was made to the particular superintendent's office in order to reschedule the interview at a different mutually convenient time.

Introductory comments to superintendents at time of interview. The interviewers explained to the superintendents that the Research Unit was conducting a project to determine if there is a relationship between certain basic school operating procedures and certain aspects of the vocational education program. The interviewers then briefly stated that the reason for collecting this information is to develop predictions relative to the direction the State can expect Idaho's vocational education program to take in the next few years.

The interviewers did not voluntarily offer the superintendents any additional background information to the study for several reasons which follow: (1) the interviewers' realization of the demands upon the superintendent's time; (2) the fact that if the superintendents sought additional preliminary information, the pause in the interview presentation was the most appropriate place for them to raise questions; (3) the pilot interviews indicated that the brief introductory comments satisfied the superintendents; and (4) the superintendents were generally eager to proceed with the actual interviews.

The interviewers then proceeded to explain to the superintendents that for expediency of the interview, the Research Unit designed a highly structured two-part interview instrument; the first part is related to general school operations, while the second part focuses on vocational education. At this point the interviewers mentioned that the instrument was, for the most part, self-explanatory, and if the superintendents would prefer to proceed with their interviews, it was an opportune time to continue. This suggestion was invariably all that was necessary to commence the interviews.

Reference and response cards. Three cards were designed to increase the superintendents' understanding and to increase the consistency of responses. The purposes and uses of these individual cards are discussed in detail below.

Design of the Review Interval card. The Review Interval card was designed to expedite the answering of question 3 regarding the frequency with which a particular written item was reviewed by a school district for _possible_ revision. A copy of this card may be found in the appendix as Exhibit F. The responses of the scale produced the following: (1) "Seldom" to (2) "Annually" to (3) "Semi-Annually" to (4) "Frequently."

Use of the Review Interval card. This card was used very sparingly and only when, in the opinion of the interviewers, its use was desirable to expedite the completion of question four.

There were two main situations relative to the use of the Review Interval. The first situation was in those cases where school districts had relatively few written items as mentioned in question 4. When the superintendents were asked to respond to the review interval in these kinds of situations, the superintendents would usually respond with a word or phrase already listed on the card. Thus the interviewer merely recorded the appropriate "CODE: numbers for the superintendents' responses.

The second situation involving the Review Interval card was where school districts had relatively many items in question 4, and which therefore required that the card be presented to the superintendents for their use. In these instances, the superintendents were asked a single general question as to when they reviewed these items for possible revision. Usually the response would be in "blanket" form, i.e., "once a year." However, before the interviewers recorded blanket code numbers, a reliability check was made. This check was made in regard to items (f) School board policies, and (g) Student constitution and/or policies. Items (f) and (g) were checked because they represent areas that are frequently outside of the superintendents' immediate realm of jurisdiction, that is, school board policies are primarily a school board matter, and student constitutions and/or policies are primarily individual schools' and principals' matters. The reliability of the superintendents' blanket statements was suggested by the fact that not a single superintendent altered his original blanket statement when a reliablility check was made.

Design of the General Four-Point Scale card. The General Four-Point Scale card was designed to expedite the answering of all interview statements that included the phrase, "to what extent." A copy of this card may be found in the appendix as Exhibit C. The items of the scale for this card produce the following sequence: (1) "Very little or none" to (2) "Some extent" to (3) "Considerable extent" to (4) "Very much so or always." The purposes of the card were: (1) to obtain responses to questions that could be categorized in accordance with a predetermined quantification procedure; (2) to provide all respondents with a standard response reference; and (3) to simplify the responses so that only an answer of 1, 2, 3, or 4 was necessary.

As will be noted on the copy of the General Four-Point Rating Scale card, two coding outlines were offered. The outline on the top half of the card was a simple continuum, whereas the lower outline was a more elaborately explained rating medium. These outlines were designed to supplement each other, and to offer two forms of reference for responding. It was assumed that a particular response outline may have more appeal to a given superintendent than another style of response outline.

Use of the General Four-Point Rating Scale card. This card was handed to the superintendents following the completion of interview instument question 4. The congruency of the two kinds of response scales was explained to the superintendents and they were then asked to respond to the next set of questions by number, i.e., 1, 2, 3, or 4. However, it was also pointed out to the superintendents, at the time they received the card, that the card was not designed to limit their responses to only a number. The interviewers were cognizant of the value present in the superintendents' incidental and elaborative comments. Any such comments were recorded.

Upon the completion of the questions one through three which are related to districts, the interviewers informed the superintendents that, temporarily they would not have a need for the rating scale cards. However, the respondents were informed that they would want to refer to the rating scale cards later on in the interviews, and for that reason, they could simply set them aside for the time being. It was not until interview instrument question 16 was completed that the rating scale cards were used once again.

Design of the Subject Areas Included in the Vocational Education Program card. The vocational education subject area card was designed to offer the superintendents a working definition of the term *vocational education* as used in this study. A copy of this card may be found in the Appendix as Exhibit H.

Use of the Subject Areas Included in the Vocational Education Program card. This card was handed to the superintendents following the completion of question 14 of the interview instrument. The interviewers explained that for purposes of this study, the term vocational education was used to include all of the subject areas outlined on the card. It was also mentioned to the superintendents that it was not assumed that any school district would have all of the subject areas listed on the card, but that if their districts had at least one of the listed subject areas, the interview could proceed. It is appropriate to note that all of the schools participating in this study had at least two of the listed subject areas.

After the completion of interview instrument question 15, the superintendents appeared to have well fixed in mind those vocational education subject areas that were offered in their schools, and that also coincided with the definitional outline offered on the vocational education card. Therefore, primarily for this reason, the superintendents' reference transition from the vocational education card, back to the General Four-Point Rating Scale card, did not cause any evident or expressed problem that interfered with the interview.

Attitude of superintendents toward interview technique. The following discussion is in support of the earlier prediction that the businesslike approach of the interview sessions would be appealing to the superintendents. Many superintendents expressed their satisfaction with the interview sessions. The general appeal of the interview sessions most likely was due in a large part to one or more of the factors outlined in the paragraphs below.

The superintendents expressed a tendency to give questionnaires a low priority. The superintendents' reasoning for this low priority was based on their belief that they, as superintendents, were too preoccupied with regular school business, and that they too frequently were called upon to complete questionnaires whose validity and importance they questioned.

While most of the information obtained through the interviews could have been obtained by the questionnaire method, the interviews allowed for any desirable individual clarification, and were a direct means of obtaining the information.

The superintendents were looking forward to, or at least were expecting, the actual interview sessions since they had already granted their permission to be interviewed at the time of the initial telephone contacts.

The actual time consumed by the interviews was reasonably short. The estimated interview time range was from twenty to one hundred twenty minutes; the estimated median time was thirty-five minutes.

None of the inforation that was sought by the interviews could have been feasibly and/or reliably obtained from sources other than the interviewed superintendents. Thus the superintendents felt that these were appropriate questions for them to answer.

A favorable impression was given to the superintendents by the fact that a research unit placed enough importance on their comments and their districts to include them as a portion of the sample; and that the Unit would incur the expense of actually going to the superintendents' offices for the interviews.

The coding and definition cards were easy to understand and use after the interviewers gave a short verbal introduction of the cards. The cards also structured the interview to the extent of providing common interview guidelines. Furthermore, this structure assisted in maximizing the use of the time available for interviews.

VI. THE STATISTICAL ANALYSIS

The data of this study are reported in terms of grouped frequencies and these are compared by contingency tables. In order to facilitate this comparison process, an important statistical question of the study was whether the frequencies observed deviate significantly from expected frequencies. To be more specific, the question is raised as to whether the pattern is real rather than due to pure chance. Thus this study is looking for basic relationships.

Comparing properties and propositions with each other and with vocational program change by use of the chi-square technique. In all data obtained consideration was given to whether the deviation of observed values (actual frequencies) from expected values can be attributed to (1) sampling errors, or (2) a non-chance factor which is operating at a certain level of probability. In order to examine any data deviations as described, the chi-square (X^2) test of independence is used; one formula for which is:

$$X^2 = \sum \left[\frac{(\text{Actual Frequency} - \text{Expected Frequency})^2}{\text{Expected Frequency}} \right]$$

The null hypothesis was assumed for testing specific circumstances as being of equal chance of occurrence. In order to facilitate the testing of the previously mentioned specific circumstances, the circumstances are described to conform to null hypothesis, namely:

1. There is no relation between the amount of change in the vocational education program and the various properties of the open system theory, e.g., open systems exchange information with their environment.

2. There is no relation between the amount of change in the vocational educational program and the various propositions of the system theory of administrative change, e.g., the more hierarchy the less change.

3. There is no relation between a property, e.g., open systems exchange information with their invironment, and a proposition, e.g., the more hierarchy the less change.

Adequacy of analysis. The above statistical relationships comprise the analytical coverage of this study. In this exploratory type of study, the chi-square analysis was an appropriate level of interpretation for the degree of refinement of the obtained data. To apply a more sophistocated statistic did not appear necessary nor proper due to the limitations of exploratory data. This study is simply looking for basic relationships, not degrees of relationships. The levels of significance selected are described as: .01, highly significant; .05, significant; and .10, limited significance. For purposes of this study the .10 level of significance was selected as the lowest level for discussion in Chapter VI.

VIII. SUMMARY

This is an exploratory study. The population of this study consisted of Idaho school superintendents. A fifty per cent sample was randomly selected in a stratified model from Idaho's six junior college districts. An interview instrument was developed to obtain information relative to properties of the open system, to certain propositions which are generated from these properties, and to vocational program change. The items of the interview instrument were grouped into the categories of general school operations and vocational education programs. A typically businesslike approach was used in every phase of the interview process. Reference and response cards were used to facilitate the obtaining of data. The superintendents, without exception, responded favorably toward the interview technique. The data of this study are reported in terms of grouped frequencies and these are compared by contingency tables. The question is raised as to whether the data are real or due to pure chance. In this exploratory type of study the statistical analysis of the data consisted of the chi-square test of independence. Questions were designed for sub-tests which investigate various relationships between properties, propositions, and vocational program change. Any formulated null hypotheses were rejected if the probability of obtaining the results by chance was less than 10 per cent.

CHAPTER IV

RELATIONSHIP BETWEEN PROPERTIES AND SCHOOL DISTRICT STRUCTURE

The subject of this chapter is the quantitative relationship between properties of open systems as earlier discussed by Hearn, and characteristics of school districts which tend to control administrative change.

Griffiths' theory of administrative change hypothesizes that change in an organization would be relatively infrequent. The term for Griffiths' theory is the "system theory of administrative change." This term refers to the situation in which an organizational system controls the possibility for administrative change to occur within the organization. The reference to *system* implies that the entire organization as a "corporate entity" is involved in any change. Thus no one individual is entirely responsible for bringing about organizational change.

I. ASPECTS OF CHANGE IN SCHOOL DISTRICTS

School districts, as formal social organizations, are comprised of a number of people functioning to perform the tasks established by their societies or environments. These performances require continual mutual interaction of elements relative to both the school districts and their societies. The extent to which these interactions exist is characterized by the degree to which the school districts are open systems. As open systems, the school districts have two major characteristics of change: the first is the openness of the administrative organizational structure which encourages certain properties; and second is the conditions which are predicted by propositions discussed in Chapter V.

Structure and properties. The basis of Griffiths' theory of administrative change lies in the *structure* of open systems whose properties permit change. This theory states that typically, organizations tend to maintain themselves in steady states, to be self-regulating, and to display progressive segregation. Most organizations, including school districts, are established to achieve specific goals. Because of this orientation effect, it can be concluded that organizations would generally be found to have steady state characteristics.

In this study it was necessary to measure the degree to which open-system properties were present in the school system. Questions were developed to measure these properties. More measures were developed for some properties than others. The use of more measures should not suggest that the researchers felt one property was more important than other properties having fewer measures. In the development of a composite score for the district, each property was considered to be of equal importance.

Not all properties were equally conducive to the development of questions related to administrative organizational structure. The main determiner of the number of questions for each property, therefore, was the relative suitability of the questions which were considered.

II. DISCUSSION AND QUANTIFICATION OF PROPERTIES

The interview schedule which was developed for this study began with general questions (measures) of basic conditions commonly found in school districts. Eventually the schedule led into specific measures of change in vocational education programs. The development of the measures facilitated the testing of properties of the open system theory.

Accuracy of statements of measure. One or more questions were developed for every property that lent itself to being measured. To have limited the development of statements to a few selected properties would have yielded limited information. Thus by using a variety of measures the interview instrument produced a range or scale of responses that has the highest probability of accuracy. Furthermore, this provides a relatively strong total measure against which to compare any individual property. It is possible that one or two of these properties would be a representative and sufficient measure of openness.

Method of rating statements of measure. It was necessary, in the absence of any prior studies as guidelines, to use a quantification scheme which had good face validity, and to strengthen this further by using several related questions for a given measure whenever possible. Accordingly, this has been the procedure for each of the properties and propositions measured in this study. (The result is considered to be a very good ordinal measure in each case.)

The quantification of the data is dependent upon rating the opinions of superintendents working within their respective school districts. A scoring range was developed to facilitate the reporting of the response to individual statements. This range is from one to four (four to one in the case of negatively stated items). In those cases in which a single question had multiple parts, each part has been assigned equal weight. That is, no one part is considered to be of more value than any corresponding part. From the multiple parts an average score was obtained. This average was then used as the value representative of a particular question which consisted of multiple parts. If the process of averaging yielded fractional parts of a whole number, then the average score was rounded off to the nearest whole number. It was felt that the instrument was not sufficiently precise to warrant decimal reporting.

Method of rating properties. The properties are quantified from a value of one (representing the lowest support) to a value of four (representing the highest support). The responses of superintendents which yielded a high rating relative to the property questions were taken as indices of an open system.

In those cases in which a single property had multiple questions, each question was assigned equal weight and an average score was obtained. If the process of averaging yielded fractional parts of a whole number for a particular property, then the number was rounded to the nearest whole. The average raw score for a given property was then added in with like scores from each property, yielding a complete open system score. Any fractional part which remained in this final step was rounded off to the nearest whole number.

The number of measures ranged from one to four for any given property. It is to be noted that this study is unprecedented in its attempt to develop a model for measuring the presence of open system properties. Therefore, the further refinement of the interview instrument as a measuring device can only be achieved after further similar studies.

III. DISCUSSION OF OPEN SYSTEM PROPERTIES

While open systems contain the properties of systems in general, that is, they contain a network of dynamic elements in mutual interaction, open systems have certain unique properties. These open system properties, and the questions which were generated to measure these properties, are discussed throughout the remainder of this section of Chapter IV. The properties as stated in this chapter are presented in the words of Griffiths. While these statements closely parallel those of Hearn as previously listed in Chapter II, they are somewhat different in structure. However, they are not different in meaning.

Property 1

"Open systems exchange matter, energy, and information with their environment; that is, they have inputs and outputs."

Measurement of property 1. When measuring this property, the focus was on two factors: (1) information, and (2) the extent to which inputs from the environment are directly brought to the attention of the school district.

The reason for the emphasis on information rather than matter or energy was due to the difficulty of measuring matter or energy factors which a school district may exchange with its environment.

The reason for the emphasis on inputs into the school district rather than outputs was due to the availability of input index factors such as number, kinds, and effects of individual and group contacts made by members of the community upon the school district.

Questions for property 1.

1. To what extent have you been approached by INDIVIDUALS in the community who had an interest in the general curriculum, and in whom you had confidence?

2. To what extent were the changes suggested by these individuals put into practice?

3. To what extent has advice been *offered* to the school by any of the following community *GROUPS*?

    a) Board recognized lay citizens' advisory committees.

    b) Groups that are affiliated with some recognized organization, but having no official board/group relationship.

    c) Non-affiliated groups.

    d) To what extent were the changes put into practice that were recommended by (each of the mentioned groups)?

    e) To what extent does the school district seek advice from (each of the mentioned groups)?

Question 1 and 2 above were designed to determine the extent that any *individual* may influence the school district. The remainder of the questions above were designed to determine the extent that various *groups* may have in influencing a school district.

Method of rating property 1. There are three interrelated three-part questions, and two individual questions which comprise a total group of eleven questions.

Question 2 above is an extension of question 1 in that question 2 seeks to determine the effect that individuals had on the school district as a result of approaching the superintendent.

The parts of questions 3a) and 3d), 3b) and 3d), and 3c) and 3d) each have the same pair interrelationships as do the pair of questions 1 and 2. For this reason an elaboration of these additional pair relationships is not included.

Question 3e) is in three parts. It is a separate means of measuring the degree to which a school district is an open system as the result of the district seeking advice (information) from its environment. It is also believed that when a school district seeks advice it is highly probable that it will exchange information with the party whose advice is sought.

The composite score for property 1 was the mean of the answers obtained. The mean was rounded off to the nearest whole number for the purpose of categorization.

The questions for property 1 appear as numbers twelve, thirteen, and fourteen with parts (a), (b), (c), (d), and (e) in the interview instrument. (See Exhibit C of the Appendix.)

Property 2

"Open systems tend to maintain themselves in steady states."

Measurement of property 2. It is believed that a steady state in a school system is likely to occur when policies and standard operating procedures were recorded in written form. Furthermore, if the policies and standard operating procedures were routinely reviewed for possible revision, this would be an index relative to the degree to which a school district was an open system.

Questions for property 2.

Do you have any of the following items in written form?	(written)	(If written, review interval)
a) Course outlines		
b) Teacher Job descriptions		
c) Administrator job descriptions		
d) District and/or individual school handbooks		
e) Organization chart		
f) School board plicies		
g) Student constitutions and/or policies		

Method of rating property 2. Simply because a school district has policies and procedures in written form does not suggest that the system is open. On the other hand, when written items are reviewed for possible revision, this implies that the system is kept open and current. Thus no rating was allowed for the mere fact that a written item existed or did not exist.[1]

It is believed that if a written item was never reviewed, the item in itself would not indicate any degree to which a school district is an open system. It is reasoned that since any social system is in a constant state of flux, any item that is not reviewed becomes incongruous with society. Thus, when written items are not reviewed for possible revision, they may actually be indicative of a closed system. The frequency with which an item is reviewed for possible revision indicated a degree of flux, and thus, in accordance with property 2, indicates a degree to which a school district is an open system.

The raw scores that a district would receive for the questions for property 2 constitutes the simple total of a school district's written policies and procedures. This question's value on the standard (one to four) rating scale of this study depends on a given proportion of the seven listed items. For example, if only one item is checked it would represent 1/7th of the questions for which an item exists in written form. If any one of these items was reviewed one or more times during a year, the school district would be considered a more open system and thus receive at least a 2 rating for this item.

If all seven items contributeto their fullest, that is, indicate the greatest degree to which proposition 2 represents an open system, the rating would be twenty-eight; that is, seven items, each having a four rating equals a total rating of twenty-eight. At the opposite end of the rating continuum would be the most closed system rating of zero. Since both ends of the continuum are more theoretical than realistic, and also because no system can be measured in absolute terms, a statistical range was developed for categorizing scores and is indicated in Table II below. This range enables the total factors to be given a rating from one to four which is consistent with all other questions.

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[1] The review interval ratings of one to four were achieved by the use of a coding card which appears in the Appendix as Exhibit F.

The questions for property 2 appear as number four, parts "a" through "g" in the interview instrument.

TABLE II

RATING FOR COMPOSITE STANDARD OPERATING PROCEDURES

Range of factor totals	0-7	8-14	15-21	22-28
Rating	1	2	3	4

Property 3

"Open systems are self-regulating."

Measurement of property 3. Property 3 may be conceptualized as an extension of the steady state of property 2. That is, a sudden unexpected change in the standard operating procedures will cause the components of a school district affected to incur a temporary state of flux. However, following the change, the components should ragain their normal operational process. This is a form of self-regulating process.

Questions for property 3.

1. To what extent is the school staff able to adjust to changes on a given day which become necessary on the same day?

2. To what extent is the school staff able to adjust to changes that become necessary on more than a day's notice?

These questions were designed to determine the extent that personnel working within a given school district are able to adjust to change intervals that occur within the district. Responses yielding ratings on a four-point rating scale were taken as indices relative to the degree to which a school district is an open system.

Method of rating property 3. The scores received for the two questions related to property 3 are averaged in order to arrive at a single composite rating.

The questions for property 3 appear as number nine, parts (a) and (b) in the interview instrument.

Property 4

"Open systems display equifinality: That is, identical results can be obtained from different initial conditions."

Measurement of property 4. This property presents a hypothetical situation that does not appear measurable at least on a short term basis. To measure two different school systems' degree of openness relative to their conditions at inception, and then to compare their progress exceeds the limitations of this study. Thus no attempt has been made to measure property 4.

Property 5

"Open systems maintain their steady states, in part, through the dynamic interplay of sub-systems operating as functional processes."

Measurement of property 5. It is believed that while the various components (sub-systems) of a school district have conflicts with one another, these conflicts are not insurmountable because there is a kind of established dynamic effort which contributes to the permanency of the system.

Questions for property 5.

1. When there are district-wide problems, i.e., curriculum, salary, etc., to what extent does the staff maintain working relationships with one another?

2. To what extent does the staff adequately conduct their duties when there are differences of opinions among the staff on a district-wide problem?

3. Since it has been our experience that one department is likely to infringe upon the rights and/or prestige of other departments, to what extent has the district been able to lessen this infringement?

4. To what extent are teacher committees utilized to evaluate changes in the school's programs or organization?

Questions 1 and 2 above were designed to determine the extent to which a school district's staff is capable of maintaining its steady state during district-wide conflicts. Question 1 is concerned with professional interrelationships, whereas question 2 is concerned with actual teaching ability.

Question 3 above refers to staff interactions, but from the position that the school district has been able to alleviate infringements of one department upon another.

Question 4 above was designed to determine a school district's degree of dynamic interplay through the utilization of faculty meetings. This question assumes that if a school district increases the opportunity for dynamic faculty interplay to take place by administrator-called meetings of the faculty, it is an index of an open system.

Method of rating property 5. The scores received from the four questions related to property 5 are averaged in order to arrive at a single composite rating.

The questions for property 5 appear as questions six, seven, eight, and ten in the interview instrument.

Property 6

"Open systems maintain their steady states through feedback processes."

Measurement of property 6. The concept of feedback, as used in system theory, refers to those inputs which consist of reactions to specific outputs of the system. In other words, feedback results in operational adjustments made by a school district as a result of evaluations (inputs) based on past performances (outputs), that ultimately affect the educational process of future students.

Question for property 6. To what extent are provisions available for program evaluations to be based upon: (a) Student comments? (b) Teacher comments? (c) Community comments? (d) Follow-up studies of graduates? (e) Follow-up studies of drop-outs?

The above question was developed to measure the extent to which a school district actively provides for formal evaluation of its program. The evaluations under consideration are those conducted by various personnel that are either presently associated with, or were formerly associated with any given school district.

Method of rating property 6. The scores received for the five-part question related to property 6 are averaged in order to arrive at a single composite rating.

The question for property 6 appears as number eleven in the interview instrument.

Property 7

"Open systems display progressive segregation."

Measurement of property 7. Progressive segregation occurs when a school district separates into a hierarchy of sub-systems. The result of this separation is the development of a certain amount of independence of any sub-system from any one of its superior, subordinate, or equal sub-systems.

It was believed that to obtain an accurate index of this property was difficult due to the likelihood that large school districts have a more hierarchial order of subordinate systems than smaller school districts. Thus a small school district with few sub-systems would tend to receive an unjustifiably lower rating than a large school district. However, it is likely that all sizes of school districts would have an organizational chart, teacher job descriptions, and administrator job descriptions. Those therefore were used.

Questions for property 7.

1. (Repeated from property 2) Do you have any of the following items:

(written) (If written review interval)

a) Course outlines . . . . ______ . . ______
b) Teacher job descriptions . . . . ______ . . ______
c) Administrator job descriptions . . . . . ______ . . ______

2. Does the faculty have professional association meetings separate from meetings of the faculty called by administrators?

3. (If a "yes" response was obtained for question 2) What per cent of these professional association meetings are separate from meetings of the facualty called by administrators?

To obtain indices of the progressive segregation of a school district question 1 above utilized the same three items that were used in a question for property 2.

Question 2 above was judged to be an additional measurement of segregation (sub-system departmentalization). The basis for this assumption was that a school district would receive a higher open system rating if it has professional association meetings which are separate from meetings of the faculty called by administrators. Furthermore, it is believed that a district's open system rating would be in direct proportion to the per cent of professional association meetings separate from meetings of the faculty called by administrators. Thus, the development of question 3 above.

Method of rating property 7. The quantification of the data for question 1 was basically the same as the quantification for property 2. For this reason it is sufficient to mention that if all three items of question 1 relative to property 7 contribute to their fullest, the scoring would be twelve. This scoring would be indicative of an open system, whereas the most closed system score would be zero. A range was developed for rating scores and is indicated in Table III below.

TABLE III

RANGE OF INDEPENDENCE OF

SUB-SYSTEMS

Range of factor totals	Rating
0-3	1
4-6	2
7-9	3
10-12	4

In the quantification of the second question it is believed that a "no" response would yield the most closed system rating of "one" (see Table IV which follows). If the separation of meetings occurred less than fifty per cent of the time, a two rating would be recorded. A four rating would be give to only those districts which always had professional association meetings separate from administratively called meetings.

TABLE IV

INDEPENDENCE OF MEETINGS PERCENTAGE RATINGS

Response	No.	Less than 49%	50% - 99%	100%
Rating	1	2	3	4

In order to obtain a single rating for question 1 and 2, an average score was computed.

The questions for property 7 appeared as number four, parts (a), (b), and (c) and number five in the interview instrument.

IV. SUMMARY

The "system theory" of administrative change hypothesizes that school district change would be infrequent. However, school districts, as open systems, have two major characteristics of change; the openness of the administrative organizational structure, and certain conditions which exist separately from the administrative structure. The theory under consideration states that, typically, organizations tend to have steady state characteristics. While open systems contain the properties which are unique to open systems. Seven properties of the open system are discussed. Six of these properties lend themselves to measurement. Questions were developed to measure the degree to which open system properties were present in school systems. One or more measures were developed for each property which could be effectively quantified. Any question which received a high rating would be indicative of an open system.

CHAPTER V

RELATIONSHIP BETWEEN PROPOSITIONS AND SCHOOL DISTRICT CHANGE

The subject of this chapter is the quantitative relationship between propositions of systems as earlier discussed by Griffiths, and factors tending to inhibit or aid organizational change. In view of the preceding discussion of properties of an open system, a likely conclusion would be that school districts, as social organizations, are not typically characterized by change; but rather, by their tendency to resist change. However, it is clear from direct observations of school districts that they do in fact change. This inconsistency provides the impetus for the content discussed in this chapter. To account for many of the observations concerning vocational education changes in sampled Idaho school districts is an important goal. To make predictions from the analysis of these observations is the ultimate goal of this study. The conditions which would explain these observations lead to the propositions and their relationship as discussed in sections II and III of this chapter.

I. ASPECTS OF CHANGE IN VOCATIONAL EDUCATION PROGRAMS

Since school districts resist change in general so as to maintain their steady state, it appears likely that their vocational education subsystems would be severely handicapped in making changes within the organizational structure of the system (school district). This point has generated two main questions regarding vocational education change. They are: (1) What conditions tend to inhibit change? (2) What conditions tend to assist change? In an attempt to seek a solution to these questions, an analysis was conducted of several propositions which were generated from the properties of the open system theory.

Conditions and propositions. For the purposes of this study, those conditions which influence change have led to Griffiths' development of propositions that describe situations involving change. These propositions have been used as guides in the development of questions designed to determine the correctness of the propositions. These questions were designed to relate to vocational education program changes in sampled Idaho school districts.

Not all propositions were equally conducive to the development of statements of conditions related to change. The main determiner of the number of statements for each propositon, therefore, was the relative effectiveness of the questions which were considered. In the case of proposition 4, the researchers were not able to develop any satisfactory statements; this limitation will be discussed in the following two sections of this chapter.

II. QUANTIFICATION OF PROPOSITIONS COVERING CONDITIONS TENDING TO INHIBIT CHANGE

Those characteristics of a school district which tend to make the initiation of change difficult are discussed in the five following propositions.

Proposition 1

"The more hierarchial the structure of an organization, the less the possibility of change."

Measurement of proposition 1. This proposition is mainly based on progressively more degrees of segregation within the hierarchial structure of the organization as stated in the earlier discussion of open systems. Such progressive segregation occurs when a system divides itself into a hierarchial order of sub-systems. Griffiths states that as a school district divides into a hierarchial order of sub-systems, the more independent one sub-system becomes from any other sub-system. This independence is likely to cause the sub-systems to resist change because it violates the dynamic interplay factor which was discussed in property 5.

In order to facilitate the testing of this proposition, the superintendents were asked to indicate the way in which a teacher should bring a curriculum innovation proposal to the superintendent's attention. The purpose of this question was to determine whom indeed the teacher must contact in order ultimately to propose to the superintendent a major change in a course or program. It was assumed that the more positions that separate the superintendent from the teachers, then the more hierarchy school districts would display.

Question for proposition 1. The question for proposition 1 is stated in the following manner: Will you tell me what administrative steps a teacher's suggestion should go through in order to propose to you some major change in a course or program?

Method of rating proposition 1. The question for proposition 1 is rated so that the greater the number of administrative steps, the lower the score, thus reflecting an increase in the hierarchial structure. Hence, a district which required the teacher to make more than three administrative contacts would receive a one rating; whereas, a district in which a teacher can go directly to the superintendent would receive a four rating.

The question for proposition 1 appears as number three in the interview instrument.

Proposition 2

"The more functional the dynamic interplay of sub-systems, the less the change in an organization."

Measurement of proposition 2. While the sub-systems of a school district display progressive segregation (independence), they develop methods of maintaining a working relationship with one another. This working relationship, or interaction of sub-systems, exists with a minimum of conflict due to each sub-system functioning in harmony with any other sub-system. Griffiths hypothesizes that the sub-systems will resist change since there is a tendency to avoid conflict. Furthermore, it appears likely that the sub-systems will seek ways in which they will be able to maintain or increase any existing degree of harmony. In other words, no sub-system wants to "rock the boat."

In testing proposition 2, each superintendent was asked to determine the extent to which his vocational education staff is capable of maintaining its steady state during individual differences of opinion, and during normal group interaction. Another question referring to vocational education staff interaction was included, but from the position of the school system having been able to alleviate infringements of one vocational education segment upon another. Basically, an attempt was made to measure the extent to which the process of resistance to vocational education program change exists as the result of: (a) individual vocational education staff members working together when they compromise differences of opinion with one another; (b) group interaction by vocational education staff members while on the job; and (c) inter-departmental competition having been alleviated by superintendents.

Questions for proposition 2. The questions for porposition 2 are stated in the following manner:

1. To what extent does the vocational education staff interact with on another while on the job?

2. To what extent does the vocational education staff adequately conduct their duties when there are differences of opinion among the vocational education staff?

3. To what extent have you, as superintendent, been able to lessen the possibility of one segment of the vocational education program, from infringing upon the rights and/or prestige of another segment of the vocational education program?

In reference to question 1, it is believed that the more effective the sub-systems work together, the more likely they are to obtain a steady state. By maintaining a steady state a sub-system, such as a vocational education department, is unlikely to change to any considerable extent. Question 1 measures the extent to which this vocational education program steady stage exists as expressed by the opinions of interviewed superintendents. The one to four ratings received for question 1 are variables contributing to the ultimate average score for proposition 2.

It appears likely that vocational education staff members will tend to avoid competing with one another because competition connotes conflict. Since the competion/conflict is probably avoided by vocational education staff members, the less the chance for change to occur within the subject areas taught by the staff members concerned. Question 2 measures the extent to which vocational education programs resist change as the result of vocational staff members displaying tranquility when they have differences of opinions.

Question 3 examines the issue of competing interest on an intradepartmental basis. When the superintendent alleviates such conflict, he is likely to be lessening the possibility for vocational education change to occur. It is recognized that there is the occasional case where the superintendent may act as a conciliator, and in doing so change will be permitted. However, after having considered the circumstances that are typically found in Idaho school districts, it was believed that this variable is indicative of the exceptional case. Thus, any effects of a superintendent's conciliatory action are believed to have minor influence. Question 3 measures the extent to which the superintendent has been able to keep the vocational education staff maintaining a stable ship, and in effect, is again a case of resistance to change.

Method of rating proposition 2. The questions for proposition 2 appear as numbers sixteen, seventeen, and eighteen in the interview instrument. The scores received for the three questions related to proposition 2 were averaged in order to arrive at a single composite rating (as previously discussed in proposition 1).

Proposition 3

"When change in an organization does occur, it will tend to occur from the top down, not from the bottom up."

Measurement of propositon 3. The first logical effort in analyzing proposition 3 is in determining what constitutes the top of the organization. In the usual school district's organizational chart, the board of education is shown at the top. Below the board of education is the superintendent. However, it appears to make little difference in the analysis of proposition 3 ff vocational education change is initiated from either the board of education of the superintendent. This is because the superintendent is the board of education's agent to the school.

district. This implies that any vocational program change that occurs at the board of education level will be reflected in the actions of the superintendent. It is thus concluded that for the purposes of analyzing proposition 3, the top of the organization (school district) will be represented by the superintendent.

Proposition 3, as in the case of proposition 1, is mainly based on the progressive segregation characteristic of the open system. This is to say that change in a school district is likely to occur from the superintendent down if there is a hierarchial order of the sub-systems. The relative independence of the sub-systems implies that vocational education program change in a school district would have difficulty occurring from the ranks of the teacher.

The questions of proposition 3 were designed to obtain information regarding change occurring from the superintendent down, or from the teachers up.

Questions for proposition 3. The questions for proposition 3 are stated in the following manner:

1. To what extent has each of the following factors been influential in changing the vocational education program: (a) Individual teachers? (b) Superintendent?

2. In which of the following two ways were you (as superintendent) able to accomplish more change in the vocational education program; as the result of: (a) You assuming most decision-making responsibility? (b) You delegating decision-making responsibility to professional subordinates?

Question 1 was designed to determine who are the usual originators of vocational change within a school district, and the extent to which these originators influence such change to occur.

Question 2 was designed to determine if more vocational change in a school district came about as the result of the superintendent either assuming or delegating most decision-making responsibility. To assume most decision-making responsibility is more representative of change occurring from the top. Conversely, if such responsibility is delegated then change has a better chance of occurring from the bottom up.

Method of rating proposition 3. Proposition 3 is rated as "top" or as "bottom" depending on whether the superintendent reports high rating for himself or individual teachers in question 1. In the event that equal ratings were given for both, then the decision regarding the direction from where change occurred is decided by question 2. If in the second question the superintendent reports that he delegated decision-making responsibility, then the rating would be classified as "bottom." Otherwise an equal rating for question 1 would be classified as "top."

The questions for porposition 3 appear as number twenty, parts (g) and (i) and number twenty-two in the interview instrument.

Proposition 4

"Living systems respond to continuously increasing stress first by a lag in response, then by an over-compensatory response, and finally by catastrophic collapse of the system."

This proposition presents a hypothetical situation that does not appear measurable, at least on a short term basis. What is essentially being stated by this proposition is that when a system (school district) is constantly subjected to increasing stress, e.g., criticism of its curriculum, the district responds by changing. The purpose of the change, in part, is to eliminate the stress (criticism). When the change occurs, the "catastrophic collapse" of the district is avoided. Since a school system and its sub-system is unlikely to incur a complete collapse regardless of the time factor involved, to test proposition 4 as stated is to exceed the time limitation and scope of this study. Thus no attempt will be made to test proposition 4.

Proposition 5

"The number of innovations is inversely proportional to the tenure of the chief administrator."

Measurement of proposition 5. This proposition is based on the open system properties which refer to the steady state characteristics of feedback and progressive segregation. As the tenure of the superintendent increases, feedback channels are developed. With the increase in tenure, major changes become less likely as the sub-systems will become relatively more independent of the superintendent due to the development of progressive segregation.

Question for proposition 5. The question developed for proposition 5 determined how many years the superintendent has held the top administrative position with his present school district. It is stated in the following manner: How long have you been superintendent of this district?

Method of rating proposition 5. Any superintendent who had three or fewer years of tenure in his present position was considered to have relatively short tenure. During the first two years he was most likely in the process of becoming acquainted with the functions of his position. During his third year he should have stabilized his position even though his tenure was relatively short.

A superintendent was considered to have medium tenure if he had held his administrative position between four and six years. During this period of time he was often handling situations on a first time basis. However, by the time the superintendent held his job with the district for seven years he was considered to have long tenure. The categories for the tenure of superintendents is illustrated in Table V below.

The question for proposition 5 appears as number one in the interview instrument.

TABLE V

SUPERINTENDENT'S TENURE RATING

Tenure	1 - 3 years	4 - 6 years	7 or more years
Rating	short	medium	long

III. QUANTIFICATION OF PROPOSITIONS

COVERING CONDITIONS TENDING TO AID CHANGE

While change in an organization such as a school district tends to be infrequent, it does occur, and occasionally it occurs to a high degree. Three of the characteristics which tend to aid the initiation of change are discussed in the three following propositions.

Proposition 6

"Change in an organization is more probable if the successor to the chief administrator is from outside the organization, than if he is from inside the organization."

Measurement of proposition 6. A superintendent who is a new employee to his school district may bring change to the district either by not being familiar with standard operating procedures, or by intentionally changing the functions of the sub-systems. This proposition is also affected by the feedback characteristic of an open school district. A superintendent from outside his school district has not established channels of communication and is likely to disrupt the school district's steady state.

Question for proposition 6. The question developed for proposition 6 determines if the superintendent is from either inside or outside his school district. It is stated in the following manner: Where did you work before becoming superintendent of this district?

Method of rating proposition 6. The design of the question for proposition 6 is related to determining if those superintendents new to their school districts act in such a way as to bring about change to the vocational education programs. Thus a superintendent new to his district was rated as an "outsider," and conversely a superintendent who obtained his position while employed with his present district was rated as an "insider."

The question for proposition 6 appears as number two in the interview instrument.

Proposition 7

"The major impetus for change in organizations is from the outside."

Measurement of proposition 7. It is assumed that when change in a school district's vocational education programs does occur, the impetus for the change will be from outside of the school district itself, i.e., from the supra-system. In attempting to test the validity of proposition 7, six possible environmental sources for bringing about the change in the vocational education program were selected. These sources are mentioned in the question which follows.

In order to determine the net effect of an outside or inside impetus, a comparison was made of the impetus for vocational education programs change that may have occurred from outside a school district, with any such impetus that may have occurred from within the same school district. To achieve this end, five possible inside sources for bringing about vocational education program change were selected. These sources are also mentioned in question 1 which follows. The fact that the groups are of different size is of no particular significance. This difference in number of sources was taken into consideration at the time of quantifying proposition 7.

Questions for proposition 7. The questions for proposition 7 are stated in the following manner:

1. To what extent has each of the following factors been influential in changing the vocational education program.
    - (a) Professional educatior groups
    - (b) State Departments of Vocational Education in ways not related to federal funding
    - (c) State programs in general
    - (d) National issues, i.e., Sputnik
    - (e) Federal programs
    - (f) Community pressure groups
    - (g) Individual teachers
    - (h) Building principals
    - (i) Superintendent
    - (j) School board
    - (k) Staff participation in professional activities

2(a). Are there any factors from outside of the school or organization that have not been mentioned, but have provided a cause for changing the vocational education program? (If yes) Please name these factors.

(b). To what extent has each of these factors been significant in changing the vocational education program?

In question 1 above items (a) through (e) are outside factors. It is realized that item (a), Professional educator groups, may generally be considered to be either an inside or outside source for bringing about change in a school district. However, since professional educator groups are actually beyond the confines of a school district, item (a) is considered to be representative of an outside source.

Question 2 was designed as a probing of general information question in order to determine any impetus for change that was not covered by question 1. These situations were considered by the superintendents to be outside influences. Additional discussion of this is included in the Appendix as Exhibit I.

Method of rating proposition 7. The first step in rating questions 1 and 2 was to have the selected superintendents determine the extent which each of the factors has been influential in changing the vocational education programs of their respective school districts. To make possible the comparison of outside factors with inside factors, a separate average score was calculated for each group of possible influential sources. By using the average scores for each of the respective two groups of factors, a score comparison was conducted. Whichever group produced the larger average score was considered to be indicative of the direction from which the major impetus for change came.

The questions for proposition 7 appear as numbers twenty and twenty-one in the interview instrument.

Proposition 8

"The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems."

Measurement of proposition 8. Perhaps this proposition is best illustrated by recalling the rate of change in the science programs of the public schools following the orbiting of Sputnik. This illustration serves to imply that there are two ways in which change takes place from environmental factors: (1) from the direct influence of the new factor, and (2) from the indirect reaction to the new factor which, in turn, directly affects other factors.

The key word in proposition 8 is intensity, that is, the quality and quantity of stimulus. For this reason, particular consideration was given to ways in which the operational statements for proposition 8 would identify how much vocational education program change actually took place.

In the development of tests for proposition 8, it was determined that the data obtained from questions 1 and 2 of proposition 7 regarding outside impetus would also fulfill in part the testing requirements of proposition 8. Proposition 7 data have been utilized in accordance with the following rationale.

1) It is believed that any significant vocational education change will be caused by a stimulus. Furthermore, since proposition 7 questions are representative of outside impetus they facilitate in determining if the stimulus for a change was from the supra-system. Thus questions 1 and 2 of proposition 7 may also serve proposition 8.

2) It is believed that any major change in the vocational education program can only imply duration (time), and thus, this study does not attempt to measure duration. However, superintendents are not likely to allow such a change unless it is intended to last for a reasonable period of time, i.e., the life of the equipment. Therefore, any major change mentioned by superintendents participating in this studyare apt to meet the duration criteria of proposition 8.

Question for proposition 8. The question for proposition 8 utilized the outside impetus factors (items "a" through "e") in question 1 of proposition 7 and the probing question (2) of proposition 7. For this reason the questions are not repeated in this discussion.

Method of rating proposition 8. It will be noted from the discussion of proposition 7 relative to method of rating that a raw score was first calculated for the change impetus which a school district received from outside (supra-system) sources. This score which represents only the outside sources was used to arrive at the number ratings for proposition 8. Such scores are considered to be representative of the intensity of the stimulus for change which a school district receives from the supra-system. The rating scheme for proposition 8 is indicated in Table VI below.

TABLE VI

EXTENT OF SUPRA-SYSTEM RATINGS

Raw score for supra-system	8 or less	9 - 12	13 - 16	17 or more
Rating	1	2	3	4

IV. CHANGE AS REPRESENTED BY INTERVIEW INSTRUMENT QUESTION 15

One of the main purposes served by the propositions is in testing the relationship between certain hypothesized social conditions, and the corresponding degree of vocational education change. Since the degree of change is a constant factor for a given school district in the statements of all propositions, question 15 has the effect of a "common denominator" in determining if each of the tested propositions was upheld. The reason for using actual changes as a reference point is that such changes are obvious and easily measured.

Purpose of question 15. Question 15 of the interview instrument was developed to test the accuracy of the proposition statements. Question 15 is a two-part question which is designed to meet two specific objectives, namely: (a) to determine what major vocational education changes occurred during a superintendent's current tenure; and (b) to eliminate the need for decision on the part of the interviewers regarding the significance of the mentioned vocational education program changes.

Statement of question 15. Question 15 is stated in the following manner: (a) During your tenure as superintendent of this district, what major changes have been made in the vocational education program? (b) Which of these changes were significant?

By including the term major in the initial change question, it is meant to explain that this study is not concerned with minor, or relatively insignificant vocational education program changes. Then by having the superintendents indicate which of the major changes that they mentioned were significant, a confirmation was obtained for any previously listed major change.

Method of rating question 15. In order to arrive at a rating for question 15, each major vocational change up to four which was indicated by a superintendent was given a rating. Thus the major changes indicated by the responses to question 15 are given the rating scheme which is illustrated in Table VII below.

TABLE VII

NUMBER OF MAJOR CHANGES RATING

Response	one change	two changes	three changes	Four or more changes
Rating	1	2	3	4

Each superintendent was free to determine whether a vocational education change which occurred during his tenure was indeed major and significant.

V. SUMMARY

School districts, as social systems typically tend to resist change. However, it is a fact that school districts do change. This inconsistency generated the question as to what conditions tend to inhibit or assist change. The answer to such a question was sought by analyzing several properties of the open system theory. Questions were designed to determine the correctness of the propositions. The degree of vocational education changes for any given district was compared with each proposition which was tested. Four propositions were tested which attempt to predict conditions tending to inhibit change, namely: hierarchial structure, dynamic interplay of sub-systems, initiation of change by persons other than the superintendent, and the tenure of the superintendent. Three propositions were tested to predict conditions tending to aid change, namely: Change is more probable if the superintendent is from outside his current school district, the major impetus for change is from the supra-system, and the intensity of the stimulus from the supra-system affects change in general. One proposition was not tested due to the limitations of the study.

CHAPTER VI

RESULTS OF THE STUDY

This chapter is limited to the reporting of the results obtained from the statistical analysis of the data. The conclusions, implications, and recommendations based upon the results of the study will be reported in Chapter VII.

The first part of this chapter will report the relationship between vocational program change and the categories for each of the properties of the open system theory.

The second part of this chapter will report the relationship between vocational progam change and the categories for each of the propositions of the system theory of administrative change.

The third part of this chapter will report the relationship between the categories of each individual property and the categories for each individual proposition.

It will be recalled from Chapter III that since this is an exploratory type of study the chi-square analysis was deemed to be an appropriate type of interpretation for the degree of refinement of the obtained data. As an exploratory study, simple relationships are sought, not degrees of relationships. The levels of significance selected are as follows: .01, highly significant; .05, significant; and .10, may have limited significance. Any chi-square figure at a level of significance between .05 and .10 is considered to be evidence of a trend worthy of future research. Therefore, the purposes of this study the .10 level of significance was selected as the lowest level of consideration for analysis. Any result at levels lower than .10 was considered not significant.

The original sample of this study consisted of fifty-four school districts. Unforeseen circumstances relating to changes in superintendents reduced this sample to fifty.

I. RELATIONSHIP BETWEEN VOCATIONAL PROGRAM CHANGE AND PROPERTIES OF THE OPEN SYSTEM THEORY

The significance of the relationship between vocational program change and each of the properties of openness is reported in Table VIII which is on the following page. This table is compiled from the results of the chi-square test of independence, the data for which are included in the Appendix as Exhibit J. Table VIII illustrates that change and the following five properties are not dependent at the .10 level of confidence, namely: property 1 regarding the exchange of information with environment; property 2 regarding the maintenance of steady states; property 3 regarding self regulation; property 5 regarding the dynamics of interplay of sub-systems; and property 6 regarding the feedback processes of open systems. However, property 7 regarding vocational program change and the progressive segregation of open systems shows a relationship at the .10 level of confidence.

TABLE VIII

TEST OF INDEPENDENCE BETWEEN VOCATIONAL PROGRAM CHANGE AND EACH OF THE PROPERTIES OF THE OPEN SYSTEM THEORY

Properties	Level of Significance			
	.01	.05	.10	.10+
1. Open systems exchange matter, energy, and information with their environment; that is they have inputs and outputs.				X
2. Open systems tend to maintain themselves in steady states.				X
3. Open systems are self-regulating.				X
5. Open systems maintain their steady states, in part, through the dynamic interplay of sub-systems operating as functional processes.				X
6. Open systems maintain their steady states through feedback processes.				X
7. Open systems display progressive segregation.			X	

NOTE: This table should be read as follows: The pattern of vocational program change does not vary systematically with the categories of properties 1, 2, 3, 5 and 6. The pattern of vocational program change and property 7 is not fully independent.

II. RELATIONSHIP BETWEEN VOCATIONAL PROGRAM CHANGE AND PROPOSITIONS OF THE SYSTEM THEORY OF ADMINISTRATIVE CHANGE

The significance of the relationship between vocational program change and each of the propositions of administrative structure is reported in Table IX which is on the following page. This table is compiled from the results of the chi-square test of independence, the data for which are included in the Appendix as Exhibit K. Table IX illustrates that vocational program change and proposition 3 regarding change occurring from the top down, proposition 5 regarding the superintendent's tenure, proposition 7 regarding the impetus for change is from outside, and proposition 8 regarding the relationship of change to the intensity of the stimulus from the supra-system, are independent. Proposition 6 regarding outside superintendents as aiding change is significant at the .10 level of confidence. Propositions 1 and 2 are highly significant at the .01 level of confidence. These two propositions refer to hierarchial structure and dynamic interplay of sub-systems. Furthermore, these last two relationships are in direct opposition to the original statements of the propositions. This is tosay that the results of this study have shown that the more hierarchial the structure, the greater the probability of change; and, the more functional the dynamic interplay between sub-systems, the greater the probability of change.

TABLE IX

TEST OF INDEPENDENCE BETWEEN VOCATIONAL PROGRAM CHANGE AND EACHOOF THE PROPOSITIONS OF THE SYSTEM THEORY OF ADMINISTRATIVE CHANGE

Propositions	Level of significance			
	.01	.05	.10	.10+
1. The more hierarchical the structure of an organization, the less the possibility of change.	X			
2. The more functional the dynamic interplay of subsystems, the less the change in an organization.	X			
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he from inside the organization.			X	
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-system.				X

NOTE: This table should be read as follows: The pattern of vocational program change does not vary systematically with the categories of properties 3, 5, 7, and 8. The pattern of vocational program change and proposition 6 is not fully independent. The pattern of vocational program change and the categories of proposition 1 and 2 are highly dependent.

III. RELATIONSHIP BETWEEN EACH PROPERTY OF OPENNESS AND EACH PROPOSITION OF ADMINISTRATIVE CHANGE

The significance of relationship between each of the properties and each of the propositions is reported in Tables X through XV which are included on the following six pages. These tables are compiled from the results of the chi-square test of independence, the data for which are included in the Appendix as Exhibit L. The calculations show that there is no dependence at better than the .10 level of confidence between thirty-eight of the forty-two possible combinations of properties and propositions. However, Tables X through XV indicate the following four combinations to be dependent at the .10 level of confidence, namely: (1) property 2 regarding steady states, and proposition 1 regarding hierarchy; (2) property 5 regarding the dynamic interplay of sub-systems, and proposition 6 regarding superintendents appointed from the outside; (3) property 6 regarding feedback processes and proposition 8 regarding change related to intensity of supra-system stimulus; and (4) property 7 regarding progressive segregation and proposition 2 regarding dynamic interplay of sub-systems.

TABLE X

TEST OF INDEPENDENCE BETWEEN PROPERTY 1 AND EACH OF THE TESTED PROPOSITIONS

Property 1. Open systems exchange matter, energy, and information with their environment; that is they have inputs and outputs.	Level of significance			
	.01	.05	.10	.10+
Propositions				
1. The more hierarchical the structure of an organization, the less possibility of change.				X
2. The more functional the dynamic interplay of subsystems, the less the change in an organization.				X
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.				X
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.				X

NOTE: This table should be read as follows: The pattern of property 1 does not vary systematically with any of the categories of propositions.

TABLE XI

TEST OF INDEPENDENCE BETWEEN PROPERTY 2 AND EACH OF THE TESTED PROPOSITIONS

Property 2. Open systems tend to maintain themselves in steady states.	Level of significance			
	.01	.05	.10	.10+
Propositions				
1. The more hierarchical the structure of an organization, the less possibility of change.			X	
2. The more functional the dynamic interplay of subsystems, the less the change in an organization.				X
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.				X
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.				X

NOTE: This table should be read as follows: The pattern of property 2 does not vary systematically with the categories of propositions 2, 3, 5, 6, 7 and 8. The combination of property 2 and proposition 1 is not fully independent.

TABLE XII

TEST OF INDEPENDENCE BETWEEN PROPERTY 3 AND EACH OF THE TESTED PROPOSITIONS

Property 3. Open systems are self-regulating.	Level of significance			
	.01	.05	.10	.10+
Propositions				
1. The more hierarchical the structure of an organization, the less possibility of change.				X
2. The more functional the dynamic interplay of subsystems, the less the change in an organization.				X
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.				X
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.				X

NOTE: This table should be read as follows: The pattern of property 3 does not vary systematically with any of the categories of the properties.

TABLE XIII

TEST OF INDEPENDENCE BETWEEN PROPERTY 5 AND EACH OF THE TESTED PROPOSITIONS

Property 5. Open systems maintain their steady states, in part, through the dynamic interplay of sub-systems operating as functional processes.	Level of significance			
	.01	.05	.10	.10+
Propositions				
1. The more hierarchical the structure of an organization, the less possibility of change.				X
2. The more functional the dynamic interplay of sub-systems, the less the change in an organization.			X	
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.				X
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.				X

NOTE: This table should be read as follows: The pattern of property 5 does not vary systematically with the categories of propositions 1, 2, 3, 5, 7 and 8. The combination of property 5 and proposition 6 is not fully independent.

TABLE XIV

TEST OF INDEPENDENCE BETWEEN PROPERTY 6 AND EACH OF THE TESTED PROPOSITIONS

Property 6. Open systems maintain their steady states through feedback processes.	Level of significance			
	.01	.05	.10	.10+
Propositions				
1. The more hierarchical the structure of an organization, the less possibility of change.				X
2. The more functional the dynamic interplay of subsystems, the less the change in an organization.				X
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.				X
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.			X	

NOTE: This table should be read as follows: The pattern of property 6 does not vary systematically with the categories of proposition 1, 2, 3, 5, 6 and 7. The combination or property 6 and proposition 8 is not fully independent.

TABLE XV

TEST OF INDEPENDENCE BETWEEN PROPERTY 7
AND EACH OF THE TESTED PROPOSITIONS

Property 7. Open systems display progressive segregation.	Level of significance			
	.01	.05	.10	.10+
Propositions				
1. The more hierarchical the structure of an organization, the less possibility of change.				X
2. The more functional the dynamic interplay of subsystems, the less the change in an organization.			X	
3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.				X
5. The number of innovations is inversely proportional to the tenure of the chief administrator.				X
6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.				X
7. The major impetus for change in organizations is from the outside.				X
8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.				X

NOTE: This table should be read as follows: The pattern of property 7 does not vary systematically with the categories of propositions 1, 3, 5, 6, 7 and 8. The combination property 7 and proposition 2 is not fully independent.

IV. SUMMARY

This chapter of the study is limited to the reporting of the rsults obtained from the statistical analysis of the data. Fifty school districts comprise the final sample of this study.

The results of the study indicate that the pattern of vocational program change (a) is not related to properties 1, 2, 3, 5, and 6 of the open system theory and (b) shows evidence of relationship at the .10 level of confidence with property 7 (progressive segregation of sub-systems).

Similarly, the results of the study indicate that the pattern of vocational program change (a) is not related to propositions 3, 5, 7, and 8 of the system theory of administrative change; (b) shows evidence of relationship at the .10 level of confidence with proposition 6 (outside superintendents aid change); and (c) is related to proposition 1 (hierarchial structure) and proposition 2 (dynamic interplay of sub-systems) at the .01 level of confidence. These last two relationships are in direct opposition to the original statements of the propositions.

Further, the results of the study indicate that the pattern of properties versus propositions (a) is not related to thirty-eight out of the possible forty-two combinations; and (b) shows evidence of relationship at the .10 level of confidence in the cases of (a) property 2 (steady states) and proposition 1 (hierarchy); (b) property 5 (dynamic interplay of sub-systems) and proposition 6 (superintendents appointed from the outside); (c) property 6 (feedback processes) and proposition 8 (intensity of supra-system stimulus); and (d) property 7 (progressive segregation) and proposition 2 (dynamic interplay of sub-systems).

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study has been focused on the decision-making process of superintendents, especially as this process related to vocational program change. An analysis of the decision-making process was facilitated by testing Griffiths' system theory of administrative change. As a result of testing the theory it was possible to investigate basic relationships between (1) properties of openness and vocational program change; (2) generated propositions of the open system theory and vocational program change; and (3) the relationship between the individual properties and the generated propositions.

Three of the most significant contributions this study can make to the field of school administrative change are (1) the development of a means to measure the properties of the open system theory; (2) the extent to which the stated propositions of the system theory of administrative change are upheld; and (3) the strength of predicting vocational program change based upon measurable conditions of interrelations in a school district.

The conclusions drawn are for a fifty per cent stratified random sample of Idaho superintendents who were responsible for secondary programs. Furthermore, many independent variables were operating within the sampled school districts during the testing of the system theory of administrative change. To a large extent, it can be assumed that these variables are unique to particular districts in the sample and restricted to the isolated area of vocational education. These variables are considered to be distributed by chance and are taken into account by the statistical procedure used

With all of the factors which have been subjected to investigation, and since these factors could not be expetimentally altered, the relationships found may not be casually related. Also, since this study is basically exploratory, only simple relationships are sought, not degrees of relationships. Therefore, the reader is reminded to be cautious in drawing implications and inferences that may tend to go beyond the data of this study.

The research findings in the preceding chapter allow certain conclusions to be drawn. These conclusions are concerned with social conditions, administrative conditions, and vocational program change. The findings reported in Chapter VI also provide the opportunity for arriving at implications. These implications, in turn, suggest areas in which further research is necessary.

I. REPORT ON THE HYPOTHESES TESTED

Data were gathered from fifty superintendents by means of an interview. The results for the investigated null hypotheses have been reported in Chapter VI. The purpose of this portion of Chapter VII will be to list the hypotheses and the extent of significance for each set of factors which are compared.

Null hypotheses regarding vocational program change and properties of the open system theory: There is no relationship between the amount of vocational program change and any tested property of the open system theory, e.g., open systems have inputs and outputs.

The null hypotheses were supported in the cases of properties 1, 2, 3, 5 and 6, all of which showed no significant relation to vocational program change:

Property 1. Open systems exchange matter, energy, and information with their environment; that is, they have inputs and outputs.

Property 2. Open systems tend to maintain themselves in steady states.

Property 3. Open systems are self-regulating.

Property 5. Open systems maintain their steady states, in part, through the dynamic interplay of sub-systems operating as functional processes.

Property 6. Open systems maintain their steady states through feedback processes.

The null hypothesis was rejected at the .10 level of confidence in the case of property 7, hence there is a relationship between vocational program change and property 7: Open systems display progressive segregation.

As previously discussed in Chapter IV, property 4 was not found conducive to the development of questions relative to administrative change. Thus, no attempt was made to test property 4: Open systems display equifinality; that is, identical results can be obtained from different initial conditions.

There are no properties having significance at the .05 or .01 level of confidence.

Null hypotheses regarding vocational program change and propositions of the system theory of administrative change: There is no relationship between the amount of vocational program change and any tested proposition of the system theory of administrative change, e.g., hierarchy.

The null hypotheses were supported in the cases of propositions 3, 5, 7 and 8. Hence the following propositions were not supported:

Proposition 3. When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.

Proposition 5. The number of innovations is inversely proportional to the tenure of the chief administrator.

Proposition 7. The major impetus for change in organizations is from the outside.

Proposition 8. The degree and duration of change is directly proportional to the intensity of the stimulus from the supra-systems.

The null hypothesis was rejected at the .10 level of confidence in the case of proposition 6 which has limited significance relative to vocational program change.

Proposition 6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization, than if he is from inside the organization.

The null hypotheses were rejected at the .01 level of confidence in the cases of propositions 1 and 2, both of which have high significance relative to vocational program change. However, in these two cases the observed relationships are exactly opposite to those predicted in the statements of the propositions. Thus the highly significant results in these cases actually indicate inverse relationships to the propositions which follow. The results indicated that the more hierarchial the structure, the more likely change; and also, the more functional the interplay, the more likely change.

Proposition 1. The more hierarchial the structure of an organization, the less the possibility of change.

Proposition 2. The more functional the dynamic interplay of subsystems, the less the change in an organization.

As previously discussed in Chapter V, proposition 4 presents a hypothetical situation that does not appear measurable, at least on a short term basis. Thus no attempt was made to test proposition 4: Living systems respond to continuously increasing stress first by a lag in response, then by an over-compensatory response, and finally by a catastrophic collapse of the system.

There were no propositions having a .05 level of significance.

Null hypotheses regarding properties of the open system theory and propositions of the system theory of administrative change: There is no relationship between a property, e.g., open systems have inputs and outputs, and a proposition, e.g., hierarchy restricts change.

The null hypotheses were supported in thirty-eight out of the forty-two possible property and proposition combinations.

The null hypotheses were rejected at the .10 level of confidence in four cases. Hence there was a relationship between property 2 and proposition 1; property 5 and proposition 6; property 6 and proposition 8; and property 7 and proposition 2. These combinations are indicated as follows:

Property 2. Open systems tend to maintain themselves in steady states.

Proposition 1. The more hierarchial the structure of an organization, the less possibility of change.

Property 5. Open systems maintain their steady states, in part, through the dynamic interplay of sub-systems operating as functional processes.

Proposition 6. Change in an organization is more probable if the successor to the chief administrator is from outside the organization, than if he is from inside the organization.

Property 6. Open systems maintain their steady states through feedback processes.

Proposition 8. The degree and duration of change is directly proportional to the intensity of the stimulus from the suprasystem.

Property 7. Open systems display progressive segregation.

Proposition 2. The more functional the dynamic interplay of sub-systems, the less the change in an organization.

There are no combinations of properties and propositions having any degree of significance as great as .05 and .01.

II. CONCLUSIONS REGARDING GENERAL RELATIONSHIPS BETWEEN VARIOUS INVESTIGATED FACTORS

This portion of the chapter is concerned with the second stage of interpreting the data, namely: the development of broad general conclusions. The data and the analyses support the discussion regarding those factors which indicate a significant interrelationship.

The categorical patterns of the investigated properties of the open system theory, as a group, and the reported vocational program changes, as a group, do not vary systematically. The group pattern for the sampled school districts is that vocational program change is fully independent of the following five school district conditions, namely: (1) the extent of inputs and outputs; (2) the extent of maintaining a steady state: (3) the extent of self-regulation; (4) the extent of dynamic interplay between sub-systems; and (5) the extent of the feedback processes.

However, the group pattern for the sampled school districts suggests that vocational program change may have limited dependence on the degree to which the district displays progressive segregation.

The categorical patterns of the investigated propositions of the system theory of administrative change, as a group, and the reported vocational program changes, as a group, do vary systematically. The group pattern for the sampled school districts suggest that vocational program change *is fully independent* of the school district condition regarding (1) whether change occurs from the superintendent down or from the teachers up; (2) the superintendent's tanure; (3) whether the impetus for change is from outside of the school district itself; and (4) the intensity of the stimulus for change which is received from beyond the confines of the local school district.

The group pattern for the sampled school districts is that vocational program change *may have limited dependence* on whether the superintendent was appointed from inside or outside of the school district.

Further, the vocational program change is highly dependent on the following two school district characteristics, namely: (1) the degree of hierarchial structure; and (2) the degree of dynamic interaction of the sub-systems. These last two conclusions, however, are in direct opposition to the two propositions which stated that the more hierarchy the less change, and the more interplay of sub-systems the less change. Hence, the findings indicate that the more hierarchial the structure, the greater the probability of change; and the more functional the dynamic interplay between sub-systems, the greater the probability of change.

The categorical patterns of the investigated properties of the open system theory, as a group, and the categorical patterns of the investigated propositions of the system theory of administrative change, as a group, do not vary systematically. The group pattern for the sampled school districts suggests that the properties of the open system theory *are fully independent* of the propositions of the system theory of administrative change. This was found to be the situation in thirty-eight of the forty-two matching combinations that are possible from the two groups of factors. These combinations are clearly shown in Tables X through XV found in Chapter VI.

The group pattern has shown that the following four factors of a property and proposition may have limited dependence on one another: (1) the extent to which a system tends to maintain a steady state and the degree of hierarchial structure; (2) the extent to which a system displays dynamic interplay and whether the superintendent was appointed from inside or outside of the school district; (3) the extent to which a system maintains feedback processes and the degree of intensity from outside stimuli; and (4) the extent to which a system displays progressive segregation and the degree of dynamic interplay between the district's sub-systems.

III. IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE STUDY

This portion of the chapter is concerned with drawing implications from the results of the study and making recommendations for future studies. The properties and propositions will not be identified by number. Rather they will be described in terms of their meaning or the actual activities which occur in school districts. There is sufficient evidence to suggest that each of these relationships should be investigated in future research.

Properties related to change. Progressive segregation is the only property which was found to be significantly related to major change. This relationship implies that certain characteristics of the school district tend to be accompanied by change, i.e., professional association meetings separate from faculty meetings, staff job descriptions, course outlines, and the review of these written materials. The writing of job descriptions and the holding of separate professional meetings probably do not cause change. However, they are indicative of the environment of the school and the evidence suggests that these environmental factors vary systematically with major change. The causal factors which relate progressive segregation to changes in the systematic way observed can possibly be explained by the following conditions. (1) In contrast with highly rigid structures or with undefined structures (both of which tend to deny constructive communications), organized departmentalization indicates areas (boundaries) or responsibilities. Personnel can then be more constructive in interrelationships because they are aware of these boundaries. (2) Progressive segregation implies the maintenance of a communications structure among sub-systems. This suggests means for groups with differing interest to conduct constructive review of suggested change.

Propositions related to change. Three propositions showed significant relationship to change. One of these propositions showed a relationship in the direction predicted by the theory. Superintendencies which have been filled from candidates outside of the district produced more change. The fact that the superintendents were from outside is not suggested as the cause for change. Rather, it is submitted that the extent to which superintendents were sought who could bring with them innovative ideas (and be effective in presenting these ideas to the district) was parallel to the extent of change.

The remaining two propositions showed significant relationship to change, but in a direction exactly opposite to the predictions of the theory. Furthermore, as previously indicated in the chapter, the relationships were significant at the .01 level of confidence, the highest of any obtained in the study. It is necessary, therefore, to attempt some explanation of these two reversals. It should be made clear that these findings do not disprove the propositions. New studies using different questions might yield significant relationships in the predicted direction. It also is possible that conditions most conducive to change in the sample school systems differ from those in other institutions. Accordingly, the following two paragraphs contain what seems to be plausible explanations for the relationships obtained.

The proposition concerned with the hierarchy of administrative steps required to initiate a major change was related to change more strongly when several levels of administrative consideration precede the change. The requirement of several steps in the chain of command probably does not cause change. However, it establishes a flow and screen of ideas which produces a concentration on the most constructive proposals. The evidence suggests that this effect has in fact been accompanied by more change. The causal factor which related hierarchy to change can probably be explained by the following: (1) A chain-of-command type of hierarchy tends to expedite decisions more effectively that either a system of screening committees or a referral of all suggestions directly to the superintendent; and (2) this screening process of hierarchy tends to supply the recommendation and impetus of informed administrative opinion to a constructive proposal for change.

The proposition concerned with the dynamic interplay of sub-systems is accompanied by change. The maintenance of harmonious interaction between the vocational education department and personnel may not be the direct cause for change. However, the establishment of departmental interaction and the reduction of the possibility of infringement among departments are conditions which accompanied change. The stability of sub-systems found in this study apparently indicates cases of similar staff attitudes regarding change. It can be inferred that a steady state is an effect of harmonious attitudes rather than a cause of harmonious attitudes. Hence, the most plausible interpretation is that harmonious attitudes in the vocational education departments induced change.

Properties related to propositions. There were four examples in which a property was significantly related to a proposition. First, steady states seem to accompany increased hierarchy. School districts that develop a hierarchy through job descriptions and separate staff meetings have better interpersonal relationships. One inference of this relationship would be that the degree of structure works to reduce strain among staff, hence producing better interpersonal relationships. That is to say, everyone knows his function in the organization. The organizational patterns and structure by which this study identified steady states have been found to accompany increased hierarchy. These are in fact merely different aspects of organizational structure. Hence, it would be expected that these two conditions would vary systematically with each other.

Second, progressive departmentalization seems to accompany dynamic interplay of sub-systems. It appears that progressive departmentalization contains characteristics which maintain the interplay in such a way as to induce change. The converse relationship (namely that harmonious interplay of sub-systems would be likely to cause department s to segregate from one another) is untenable.

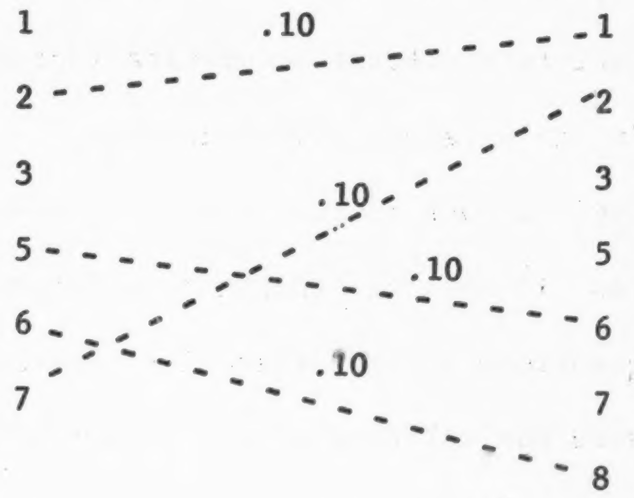
Third, dynamic interplay relates to the employment of outside superintendents. It seems that those districts which have encouraged a structure of dynamic interplay as a means of maintain steady states, are more likely to obtain an outside superintendent and to support his efforts for change. It is also possible that the outside superintendents were a stimulus to better relations among their teaching staff which then provided a means for more change.

Fourth, internal feedback conditions relate to change accompanied by strong outside stimulus. It appears possible that districts which maintain internal feedback systems are apt to respond to intense outside pressures for change rather than resist these pressures. These are in fact different aspects of communication. Hence, it would be expected that the efforts to maintain internal communications might be accompanied by the effort to maintain external communications.

In view of the implications mentioned and the possibility of other reasonable implication, it woul be important in future studies to develop additional questions to test these implications. It also would be important to measure the validity of all questions by other criteria in addition to the face validity resulting from consensus of informed opinion which was used in this study. An illustrated summary of the relationships discussed in this portion of the chapter is included in Table XVII on the following page.

TABLE XVII

SUMMARY OF SIGNIFICANT RELATIONSHIPS BETWEEN PROPERTIES, PROPOSITIONS AND VOCATIONAL PROGRAM CHANGE



Level of relationship between a property and change[1]	Properties	Level of interrelationship between properties and propositions	Propositions	Level of relationship between a proposition and change[2]
	1	.10	1	.01*
	2		2	.01*
	3	.10	3	
	5	.10	5	
	6		6	.10
.10	7	.10	7	
			8	

NOTE: This table should be read as follows: property 7 is related to change at .10 level of confidence: proposition 6 is related to change at the .10 level of confidence, and also property 5 is related to proposition 6 at the .10 level of confidence. The two asterisks (*) denote relationships that were inverse to the stated proposition. Hence, the table should be read: hierarchy increases change; dynamic interplay increases change.

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[1] Abbreviated statements of those properties which have a significant relationship, namely: open systems (2) maintenance of steady state; (5) dynamic interplay of sub-systems; (6) feedback process; and (7) progressive segregation.

[2] Abbreviated statements of those propositions which have a significant relationship: (1) hierarchy inhibits change; (2) interplay of subsystems inhibits change; (6) outside superintendent aids change; and (8) change related to intensity of supra-system stimulus.

IV. SUMMARY

The study has focused on the decision-making processes of superintendents as they relate to the system theory of administrative change. This study has contributed to the field of school administration by developing a means of measuring certain properties and propositions relative to the theory, and in predicting change based upon interrelations in a school district. Many independent variables operating within the sampled school districts during the testing of the theory were taken into account by the statistical procedure used.

The null hypotheses regarding vocational program change and properties of the open system theory were supported in all cases but that of property 7, i.e., open systems display progressive segregation. This rejection can possibly be caused by (1) the development of constructive interrelationships through organized departmentalization which indicates areas of responsibility; and (2) the maintenance of a communications structure among sub-systems.

The null hypotheses regarding vocational program change and propositions of the open system theory of administrative change, were rejected in the cases of proposition 1 (hierarchy), and proposition 2 (dynamic interplay), and proposition 6 (outside superintendents). In the cases of proposition 1 and 2, however, the relationships are in direct opposition to the original statements of the propositions. The relationship of the hierarchy proposition to change can possibly be caused by (1) a chain-of-command type of hierarchy which tends to expedite decisions; and (2) the recommendations and impetus of informed administrative opinion to a proposal for change that comes through a hierarchial sturcture. The relationship of the proposition referring to the maintenance of a steady state with change can possibly be caused by harmonious interaction and similar attitudes regarding change on the part of the staff. The relationship of outside superintendents to change can possibly be caused by the school districts seeking superintendents who could bring with them innovative ideas.

The null hypotheses regarding properties and propositions were supported in thirty-eight out of the forty-two possible combinations. The first relationship of a property to a proposition indicated that steady states are accompanied by increased hierarchy. This may infer that the degree of structure works to reduce strain among staff, hence producing better interpersonal relationships. The second relationship indicates that progressive departmentalization seems to accompany interplay of sub-systems. Apparently progressive departmentalization contains characteristics which maintain the interplay in such a way as to induce change. In the third case dynamic interplay is related to the employment of outside superintendents. It is possible that districts which encourage dynamic interplay are more likely to obtain an outside superintendent and support his efforts for change. Also, outside superintendents may be a stimulus to better relations among their teaching staffs which then provided a means for more change. The last significant property versus proposition relationship indicated that internal feedback conditions relate to change accompanied by strong outside stimulus. It appears that districts which maintain internal feedback systems are apt to respond to intense outside pressures for change rather than resisting these pressures.

In view of the implications which can be drawn from the data of this study, future studies should (1) develop additional questions to test these implications; (2) measure the validity of all questions by other criteria in addition to the face validity resulting from consensus of informed opinion; (3) be conducted in additional types of institutions; and (4) focus on the two propositions which were related to change at better than the .01 level of confidence, but were in a direction exactly opposite of the prediction of the theory.

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APPENDIX

EXHIBIT A

COMMUNITY SCHOOL DISTRICTS WITHIN THEIR RESPECTIVE JUNIOR COLLEGE AREAS THAT COMPRISE THE STUDY'S POPULATION

Area I

82	Bonner County District
101	Boundary County District
271	Coeur d'Alene District
391	Kellogg Joint District
274	Kootenai District
272	Lakehead District
392	Mullan District
273	Post Falls District
41	St. Maries Joint District
393	Wallace District
42	Western Benewah District
275	Worley District

Area II

242	Cottonwood Joint District
342	Culdesac Joint District
172	Elk River District
282	Genesee Joint District
272	Grangeville Joint District
305	Highland Joint District
1	Independent District
304	Kamiah Joint District
283	Kendrick Joint District
341	Lapwai District
281	Moscow District
302	Nezperce Joint District
171	Orofino Joint District
285	Potlatch District
284	Whitepine District

Area III

365	Bruneau Grandview Joint District
432	Cambridge Joint District
132	Caldwell District
139	Canyon District
422	Cascade District
13	Council District
221	Emmett Joint District
373	Fruitland District
192	Glenns Ferry Joint District
71	Gorden Valley District
1	Independent School District of Boise
3	Kuna Joint District
363	Marshing Joint District
11	Meadows Valley District
136	Melba Joint District
2	Meridian Joint District
421	McCall-Donnelly District
134	Middleton District
433	Midvale District
193	Mountain Home District
131	Nampa District
372	New Plymouth District
135	Notus District
137	Parma District
371	Payette Joint District
431	Weiser District
133	Wilder District

EXHIBIT A (continued)

Area IV

61	Blaine County District
234	Bliss Joint District
412	Buhl Joint District
121	Camas County District
151	Cassia County Joint District
417	Castleford District
314	Dietrich District
413	Filer District
231	Gooding Joint District
233	Hagerman Joint District
415	Hansen District
261	Jerome Joint District
414	Kimberly District
331	Minidoka County Joint District
418	Murtaugh Joint District
316	Richfield District
312	Shoshone Joint District
411	Twin Falls County District
262	Valley District
232	Wendell District

Area V

381	American Falls Joint District
33	Bear Lake County District
201	Eastside Joint District
148	Grace Joint District
21	Marsh Valley Joint District
149	North Gem District
351	Oneida County District
25	Pocatello District
382	Rockland District
150	Soda Springs Joint District
202	Westside Joint District

Area VI

58	Aberdeen District
55	Blackfoot District
181	Challis Joint District
161	Clark County District
93	East Bonneville Joint School District
59	Firth District
215	Fremont County Joint District
91	Idaho Falls District
251	Jefferson County Joint District
111	Joint District
182	Mackay Joint District
321	Madison District
252	Ririe Joint District
291	Salmon District
60	Shelley Joint District
52	Snake River District
292	South Lemhi District
322	Sugar-Salem Joint District
401	Teton County District

EXHIBIT B

COMMUNITY SCHOOL DISTRICTS WITHIN THEIR RESPECTIVE JUNIOR COLLEGE AREAS THAT COMPRISE THE STUDY'S SAMPLE

Area I

82	Bonner County District
101	Boundary County District
392	Mullan District
42	Western Benewah District
275	Worley District

Area II

282	Genesee Joint District
272	Grangeville Joint District
305	Highland Joint District
283	Kendrick Joint District
341	Lapwai District
281	Moscow District
171	Orofino Joint District
284	Whitepine District

Area III

132	Caldwell District
139	Canyon District
1	Independent School District of Boise City
3	Kuna Joint District
11	Meadows Valley District
136	Melba Joint District
2	Meridian Joint District
421	McCall-Donnelly District
134	Middleton District
193	Mountain Home District
131	Nampa District
372	New Plymouth District
431	Weiser District

Area IV

412	Buhl Joint District
121	Camas County District
417	Castleford District
413	Filer District
231	Gooding Joint District
233	Hagerman Joint District
331	Minidoka County Joint District
312	Shoshone Joint District
411	Twin Falls County District
262	Valley District

Area V

381	American Falls Joint District
201	Eastside Joint District
148	Grace Joint District
21	Marsh Valley Joint District

Area VI

161	Clark County District
59	Firth District
91	Idaho Falls District
251	Jefferson County Joint District
111	Joint District
321	Madison District
60	Shelley Joint District
52	Snake River District
292	South Lemhi District
401	Teton County District

EXHIBIT C

Dist. No. _____ STATE OCCUPATIONAL RESEARCH UNIT Date___________
ADMINISTRATIVE DESIGN OF SCHOOL SYSTEMS IN IDAHO

Town___________ Superintendent_____________ Interviewer___________

1. How long have you been superintendent of this district?_________years.

2. Where did you work before becoming superintendent of this district?
   ____

3. Will you tell me what administrative steps a teacher's suggestion should go through in order to propose to you some major change in a course or program? Teacher---___________________ ___________________
   ___________________ ___________________ ___________________

4. Do you have any of the following items in written form?
   a) Course outlines. . . . . ._____. . ._____
   b) Teacher job descriptions . . . . ._____. . ._____
   c) Administrator job descriptions . . . . ._____. . ._____
   d) District and/or individual school handbooks. . . . ._____. . ._____
   e) Organizational chart . . . . ._____. . ._____
   f) School board policies . . . . ._____. . ._____

   RESPOND TO THE FOLLOWING QUESTIONS IN ACCORDANCE WITH THE4-POINT SCALE

5. Does the faculty have professional association meetings separate from meetings of the faculty called by administrators?_____ (If yes) What per cent of these professional association meetings are separate from meetings of the faculty called by administrators?_____

6. When there are district-wide problems, i.e., curriculum, salary, etc., to what extent does the staff maintain working relationships with one another?___________

7. To what extent does the staff adequately conduct their duties when there are differences of opinions among the staff on a district-wide problem?___________

8. Since it has been our experience that one department is likely to infringe upon the rights and/or prestige of other departments, to what extent has the district been able to lessen this infringement?_________

9. To what extent is the school staff able to adjust:
   (a) To changes on a given day which become necessary on the same day?
   ____
   (b) To changes that become necessary on more than a day's notice?
   ____

EXHIBIT C (continued)

10. To what extent are teacher committees utilized toevaluate changes in the school's programs or organization?

11. To what extent are provisions available for program evaluation to be based upon: (a) Student comments?_____ (b) Teacher comments? _____ (c) Community comments?_____ (d) Follow-up studies of graduates?_____ (e) Follow-up studies of drop-outs?_____

12. To what extent have you been approached by INDIVIDUALS in the community who had an interest in the general curriculum, and in who you had confidence?_________

13. To what extent were the changes suggested by these individuals put into practice?_________

14. To what extent has advice been offered to the school by any of the following community GROUPS?

(a) Board recognized lay citizens' advisory committees. _______
____
____

(b) Groups that are affiliated with recognized organization, but having no official board/group relationship. _______
____
____

(c) Non-affiliated groups. _______
____
____

(d) To what extent were the changes put into practice that were recommended by (each of the mentioned groups)?

(e) To what extent does the school district seek advice from (each of the mentioned groups)?

THE FOLLOWING QUESTIONS REFER TO THE DISTRICT'S VOCATIONAL EDUCATION PROGRAM (VEP)

15. (a) During your tenure as superintendent of this district, what major changes have been made in the vocational education program?

_________________ _________________ _________________

(b) Whichof these changes or additions were significant?__________

16. To what extent does the VE staff interact with one another while on the job?_________

17. To what extent does the VE staff adequately conduct their duties when there are differences of opinion among the VE staff?__________

18. To what extent have you been able to lessen the possibility of one segment of the VEP from infringing upon the rights and/or prestige of another segment of the VEP?_________

EXHIBIT C (continued)

19. To what extent are VE committees utilized to evaluate changes in the VEP?______

20. To what extent has each of the following factors been influential in changing the VEP?

    (a) Professional educator groups .____
    (b) State Department of Vocational Education in ways not related to federal funding . .____
    (c) State programs in general. . .____
    (d) National issues, i.e., Sputnik____
    (e) Federal programs . . . . . . .____
    (f) Community pressure groups .____
    (g) Individual teachers . . . .____
    (h) Building principals . . . .____
    (i) Superintendent. . . . . . .____
    (j) School board. . . . . . . .____
    (k) Staff participation in professional activities . .____

21. (a) Are there any factors from outside of the school organization that have not been mentioned, but have provided a cause for changing the VEP?_____ (If yes) Please name these factors:

    ____

    (b) To what extent has each of these factors been significant in changing the VEP?_______

22. In which of the following two ways were you able to accomplish more change in the VEP, as the result of: (a) You yourself assuming most decision-making responsibility?_____OR (b) You yourself delegating decision-making responsibility to professional subordinates?______

EXHIBIT D

LETTER VERIFYING BUSINESS AFFILIATION*

August, 1967

Dear Superintendent:

The State Occupational Research Unit is conducting a study relative to vocational education programs and problems of change.

Mr. Robert J. Heger, Research Fellow with the Unit, is the chief interviewer on this study. This letter will serve to introduce Mr. Heger, who was previously an assistant principal in the Fremont Unified School District, Fremont, California.

Your cooperation with us in this study, and with Mr. Heger during the interview, will be very much appreciated.

Cordially,

Dr. Kenneth M. Loudermilk
Director, State Occupational
Research Unit
Admin. Bldg. 201-B

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*The original letters to the superintendents were sent out on the official letterhead of the State Occupational Research Unit.

EXHIBIT E

BUSINESS CARD VERIFYING BUSINESS AFFILIATION*

ROBERT W. RICHMAN
Assistant Director
State Occupational Research Unit
University of Idaho
Mowcow

*This is a facsimile of the original business card that was used in this study.

EXHIBIT F

GENERAL EXPLANATION AND CODING KEY FOR REVISION OF STANDARDIZED PROCEDURES

CODE	KEY	EXPLANATION
1	Seldom	Two years or more
2	Annually	Once every year
3	Semi Annually	Twice every year
4	Frequently	As the situation demands but more than twice a year

EXHIBIT G

GENERAL 4-POINT RATING SCALE

Directions: Please respond to questions by number, (1,2,3, or 4)

1	2	3	4
Very little or none	Some extent	Considerable	Very much so, or always

CODE	KEY	EXPLANATION
1	Very little or none	Very rarely, or from not at all, to less than 25% of the time.
2	Some extent	Occasionally
3	Considerable extent	Can usually be expected to occur at least half of the time.
4	Very much so or always	Can be expected to occur more than 75% of the time.

EXHIBIT H

SUBJECT AREAS INCLUDED IN THE VOCATIONAL EDUCATION PROGRAM

Trade and Industrial Education

Business and Office Education

Industrial Arts Education

Home Economics Education

Agricultural Education

Distributive Education

Technical Education

EXHIBIT I

Discussion of question 2, proposition 7. Question 2 was designed as a probing or general information question. Its primary purpose was to determine any impetus for vocational education program change that was not covered by question 1 of proposition 7. Thus it served as a validity check on question 1 whose completeness might be subject to doubt.

The objective of testing the validity of question 1 was served as the result of question 2 indicating only seven cases where school districts received an impetus for changing the vocational education program which came from an outside source that was not previously mentioned in question 1. These sources are indicated in the figure which follows.

FIGURE 4

CASES IN WHICH OUTSIDE IMPETUS WAS REPORTED IN RESPONSE TO INTERVIEW QUESTION 21

Description of Impetus	No.	Rating(s)
Local economic conditions	2	3,4
Agricultural groups	2	2,3
Industrial contests	2	2,4
Equipment donations from industry	1	3
Totals	7	21
Average Rating		3

EXHIBIT J*

CONTINGENCY TABLES FOR VOCATIONAL PROGRAM CHANGE AND PROPERTIES

TABLE XVIII

		Vocational program change (low) 1	2	3	(high) 4	Totals
Property 1. Exchange information with environment.	(low) 1	12	2	2	3	19
	2	8	6	3	10	27
	3	2	0	1	1	4
	(high) 4	0	0	0	0	0
	Totals	22	8	6	14	50

TABLE XIX

		Vocational program change (low) 1	2	3	(high) 4	Totals
Property 2. Maintain steady states.	(low) 1	8	1	3	4	16
	2	12	5	2	10	29
	3	2	1	1	0	4
	(high) 4	0	1	0	0	1
	Totals	22	8	6	14	50

---

*Each of the tables which follow represents the observed frequencies received from a fifty per cent stratified random sample of Idaho superintendents who were responsible for secondary programs. The reader will note that the statements of the properties in the tables are in abbreviated form. These abbreviations were made to facilitate tables construction and as a reading convenience.

EXHIBIT J (continued)

TABLE XX

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Property 3. Self-regulating.	(low) 1	0	0	0	0	0
	2	1	0	1	0	2
	3	2	2	2	3	9
	(high) 4	19	6	3	11	39
	Totals	22	8	6	14	50

TABLE XXI

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Property 5. Dynamic interplay of subsystems.	(low) 1	0	0	0	0	0
	2	1	0	1	0	2
	3	13	4	2	9	28
	(high) 4	8	4	3	5	20
	Totals	22	8	6	14	50

EXHIBIT J (continued)

TABLE XXII

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Property 6. Feedback process. (low)	1	8	1	0	3	12
	2	10	3	4	4	21
	3	3	3	2	7	15
(high)	4	1	1	0	0	2
	Totals	22	8	6	14	50

TABLE XXIII

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Property 7. Progressive segregation. (low)	1	3	0	0	2	5
	2	6	1	0	7	14
	3	13	6	6	5	30
(high)	4	0	1	0	0	1
	Totals	22	8	6	14	50

EXHIBIT K*

CONTINGENCY TABLES FOR VOCATIONAL PROGRAM CHANGE AND PROPOSITIONS

TABLE XXIV

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Proposition 1. Hierarchy inhibits change.	(high) 1	0	0	1	0	1
	2	1	0	5	5	11
	3	11	6	0	5	22
	(low) 4	10	2	0	4	16
	Totals	22	8	6	14	50

TABLE XXV

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Proposition 2. Interplay of sub-systems inhibits change.	(high) 1	0	0	0	1	1
	2	2	0	0	6	8
	3	15	2	6	6	29
	(low) 4	5	6	0	1	12
	Totals	22	8	6	14	50

---

*Each of the tables which follow respresents the observed frequencies received from a fifty per cent stratified random sample of Idaho superintendents who were responsible for secondary programs. The reader will note that the statements of the propositions in the tables are in abbreviated form. These abbreviations were made to facilitate table construction and as a reading convenience.

EXHIBIT K (continued)

TABLE XXVI

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Proposition 3. Change tends to occur from top down.	(top) 1	11	5	2	6	24
	(bottom) 2	11	3	4	8	26
	Totals	22	8	6	14	50

TABLE XXVII

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Proposition 5. Innovations inversely proportional to tenure.	(short) 1	8	4	1	1	14
	2	3	2	3	4	12
	3	11	2	2	9	24
	Totals	22	8	6	14	50

TABLE XXVIII

Vocational program change

		(low) 1	2	3	4	Totals
Proposition 6. Outside superintendent aids change.	(outside) 1	14	8	4	13	39
	(inside) 2	8	0	2	1	11
	Totals	22	8	6	14	50

EXHIBIT K (continued)

TABLE XXIX

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Proposition 7. Impetus for change is from outside.	(outside) 1	5	1	0	4	10
	(inside) 2	17	7	6	10	40
	Totals	22	8	6	14	50

TABLE XXX

Vocational program change

		(low) 1	2	3	(high) 4	Totals
Proposition 8. Change related to intensity of supra-system stimulus.	(low) 1	10	0	2	2	14
	2	9	5	4	7	25
	3	2	2	0	5	9
	(high) 4	1	1	0	0	2
	Totals	22	8	6	14	50

EXHIBIT

CONTINGENCY TABLES FOR PROPERTIES AND PROPOSITIONS

TABLE XXXI

Property 1. Exchange information with environment.

Proposition 1. Hierarchy inhibits change.		(low) 1	2	3	(high) 4	Totals
(high)	1	0	0	1	0	1
	2	4	6	1	0	11
	3	10	12	0	0	22
(low)	4	5	9	2	0	16
	Totals	19	27	4	0	50

TABLE XXXII

Property 1. Exchange information with environment

Proposition 2. Interplay of sub-systems inhibits change.		(low) 1	2	3	(high) 4	Totals
(high)	1	0	1	0	0	1
	2	2	5	1	0	8
	3	12	14	3	0	29
(low)	4	5	7	0	0	12
	Totals	19	27	4	0	50

---

*Each of the tables which follow represents the observed frequencies received from a fifty per cent stratified random sample of Idaho superintendents who were responsible for secondary programs. The reader will note that the statements of the properties and propositions in the tables are in abbreviated form. These abbreviations were made to facilitate table construction and as a reading convenience.

EXHIBIT L (continued)

TABLE XXXIII

		Property 1. Exchange information with environment. (low) 1	2	3	(high) 4	Totals
Proposition 3. Change tends to occur from top down.	(top) 1	11	13	0	0	24
	(bottom) 2	8	14	4	0	26
	Totals	19	27	4	0	50

TABLE XXXIV

		Property 1. Exchange information with environment. (low) 1	2	3	(high) 4	Totals
Proposition 5. Innovations inversely proportional to tenure.	(short) 1	7	7	0	0	14
	2	4	7	1	0	12
	(long) 3	8	13	3	0	24
	Totals	19	27	4	0	50

TABLE XXXV

		Property 1. Exchange information with environment. (low) 1	2	3	(high) 4	Totals
Proposition 6. Outside superintendent aids change	(outside) 1	13	22	4	0	39
	(inside) 2	6	5	0	0	11
	Totals	19	27	4	0	50

EXHIBIT L (continued)

TABLE XXXVI

		Property 1. Exchange information with environment.				
		(low) 1	2	3	(high) 4	Totals
Proposition 7. Impetus for change is from outside.	(outside) 1	4	5	1	0	10
	(inside) 2	15	22	3	0	40
	Totals	19	27	4	0	50

TABLE XXXVII

		Property 1. Exchange information with environment.				
		(low) 1	2	3	(high) 4	Totals
Proposition 8. Change related to intensity of supra-system stimulus.	(low) 1	7	6	1	0	14
	2	8	16	1	0	25
	3	4	4	1	0	9
	(high) 4	0	1	1	0	2
	Totals	19	27	4	0	50

EXHIBIT L (continued)

TABLE XXXVIII

Property 2. Maintain
Steady states

		(low) 1	2	3	(high) 4	Totals
Proposition 1. Hierarchy inhibits change.	(high) 1	0	0	1	0	1
	2	4	7	0	0	11
	3	9	11	1	1	22
	(low) 4	3	11	2	0	16
	Totals	16	29	4	1	50

TABLE XXXIX

Property 2. Maintain
steady states

		(low) 1	2	3	(high) 4	Totals
Proposition 2. Interplay of sub-systems inhibits change.	(high) 1	1	0	0	0	1
	2	1	7	0	0	8
	3	9	16	4	0	29
	(low) 4	5	6	0	1	12
	Totals	16	29	4	1	50

EXHIBIT L (continued)

TABLE XL

Property 2. Maintain steady states.

		(low)			(high)	
		1	2	3	4	Totals
Proposition 3. Change tends to occur from top down.	(top) 1	8	15	1	0	24
	(bottom) 2	8	14	3	1	26
	Totals	16	29	4	1	50

TABLE XLI

Property 2. Maintain steady states.

		(low)			(high)	
		1	2	3	4	Totals
Proposition 5. Innovations inversely proportional to tenure.	(short) 1	4	8	2	0	14
	2	3	7	1	1	12
	(long) 3	9	14	1	0	24
	Totals	16	29	4	1	50

TABLE XLII

Property 2. Maintain steady states.

		(low)			(high)	
		1	2	3	4	Totals
Proposition 6. Outside superintendent aids change.	(outside) 1	12	23	3	1	39
	(inside) 2	4	6	1	0	11
	Totals	16	29	4	1	50

EXHIBIT L (continued)

TABLE XLIII

Property 2. Maintain steady states.

		(low) 1	2	3	(high) 4	Totals
Proposition 7. Impetus for change is from outside.	(outside) 1	4	6	0	0	10
	(inside) 2	12	23	4	1	40
	Totals	16	29	4	1	50

TABLE XLIV

Property 2. Maintain steady states.

		(low) 1	2	3	4	Totals
Proposition 8. Change related to intensity of supra-system stimulus.	(low) 1	6	6	2	0	14
	2	7	16	1	1	25
	3	3	5	1	0	9
	(high) 4	0	2	0	0	2
	Totals	16	29	4	1	50

EXHIBIT L (continued)

TABLE XLV

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 1. Hierarchy inhibits change.	(high) 1	0	0	1	0	1
	2	0	1	3	7	11
	3	0	1	3	18	22
	(low) 4	0	0	2	14	16
	Totals	0	2	9	39	50

TABLE XLVI

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 2. Interplay of sub-systems inhibits change.	(high) 1	0	0	0	1	1
	2	0	0	2	6	8
	3	0	2	5	22	29
	(low) 4	0	0	2	10	12
	Totals	0	2	9	39	50

EXHIBIT L (continued)

TABLE XLVII

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 3. Change tends to occur from top down.	(top) 1	0	2	2	20	24
	(bottom) 2	0	0	7	19	26
	Totals	0	2	9	39	50

TABLE XLVIII

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 5. Innovations inversely proportional to tenure.	(short) 1	0	1	3	10	14
	2	0	0	2	10	12
	(long) 3	0	1	4	19	24
	Totals	0	2	9	39	50

TABLE XLIX

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 6. Outside superintendent aids change.	(outside) 1	0	1	8	30	39
	(inside) 2	0	1	1	9	11
	Totals	0	2	9	39	50

EXHIBIT L (continued)

TABLE L

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 7. Impetus for change is from outside.	(outside) 1	0	1	1	8	10
	(inside) 2	0	1	8	31	40
	Totals	0	2	9	39	50

TABLE LI

Property 3. Self-regulating.

		(low) 1	2	3	(high) 4	Totals
Proposition 8. Change related to intensity of supra-system stimulus.	(low) 1	0	0	1	13	14
	2	0	2	5	18	25
	3	0	0	3	6	9
	(high) 4	0	0	0	2	2
	Totals	0	2	9	39	50

EXHIBIT L (continued)

TABLE LII

Property 5. Dynamic interplay of sub-systems.

		(low) 1	2	3	(high) 4	Totals
Proposition 1. Hierarchy inhibits change.	(high) 1	0	0	0	1	1
	2	0	1	6	4	11
	3	0	1	11	10	22
	(low) 4	0	0	11	5	16
	Totals	0	2	28	20	50

TABLE LIII

Property 5. Dynamic interplay of sub-systems.

		(low) 1	2	3	(high) 4	Totals
Proposition 2. Interplay of sub-systems inhibits change.	(high) 1	0	0	1	0	1
	2	0	0	6	2	8
	3	0	2	15	12	29
	(low) 4	0	0	6	6	12
	Totals	0	2	28	20	50

EXHIBIT L (continued)

TABLE LIV

Property 5. Dynamic interplay of subsystems.

Proposition 3. Change tends to occur from top down.		(low) 1	2	3	(high) 4	Totals
	(top) 1	0	1	16	7	24
	(bottom) 2	0	1	12	13	26
	Totals	0	2	28	20	50

TABLE LV

Property 5. Dynamic interplay of subsystems.

Proposition 5. Innovations inversely proportional to tenure.		(low) 1	2	3	(high) 4	Totals
	(short) 1	0	1	9	4	14
	2	0	0	6	6	12
	(long) 3	0	1	13	10	24
	Totals	0	2	28	20	50

TABLE LVI

Property 5. Dynamic interplay of subsystems.

Proposition 6. Outside superintendent aids change.		(low) 1	2	3	(high) 4	Totals
	(outside) 1	0	0	23	16	39
	(inside) 2	0	2	5	4	11
	Totals	0	2	28	20	50

EXHIBIT L (continued)

TABLE LVII

Property 5. Dynamic interplay of subsystems.

Proposition 7. Impetus for change is from outside.		(low) 1	2	3	(high) 4	Totals
	(outside) 1	0	0	6	4	10
	(inside) 2	0	2	22	16	40
	Totals	0	2	28	20	50

TABLE LVIII

Property 5. Dynamic interplay of subsystems.

Proposition 8. Change related to intensity of supra-system stimulus.		(low) 1	2	3	(high) 4	Totals
	(low) 1	0	1	6	7	14
	2	0	1	17	7	25
	3	0	0	5	4	9
	(high) 4	0	0	0	2	2
	Totals	0	2	28	20	50

EXHIBIT L (continued)

TABLE LIX

Property 6. Feedback process.

		(low) 1	2	3	(high) 4	Totals
Proposition 1. Hierarchy inhibits change.	(high) 1	0	0	1	0	1
	2	1	6	4	0	11
	3	10	6	5	1	22
	(low) 4	1	9	5	1	16
	Totals	12	21	15	2	50

TABLE LX

Property 6. Feedback process.

		(low) 1	2	3	(high) 4	Totals
Proposition 2. Interplay of sub-systems inhibits change.	(high) 1	0	0	1	0	1
	2	2	3	3	0	8
	3	6	14	8	1	29
	(low) 4	4	4	3	1	12
	Totals	12	21	15	2	50

EXHIBIT L (continued)

TABLE LXI

Property 6. Feedback process.

Proposition 3. Change tends to occur from top down.		(low) 1	2	3	(high) 4	Totals
	(top) 1	5	10	8	1	24
	(bottom) 2	7	11	7	1	26
	Totals	12	21	15	2	50

TABLE LXII

Property 6. Feedback process.

Proposition 5. Innovations inversely proportional to tenure.		(low) 1	2	3	(high) 4	Totals
	(short) 1	5	5	4	0	14
	2	1	5	5	1	12
	(long) 3	6	11	6	1	24
	Totals	12	21	15	2	50

TABLE LXIII

Property 6. Feedback process.

Proposition 6. Outside superintendent aids change.		(low) 1	2	3	(high) 4	Totals
	(outside) 1	7	17	13	2	39
	(inside) 2	5	4	2	0	11
	Totals	12	21	15	2	50

EXHIBIT L (continued)

TABLE LXIV

Property 6. Feedback process.

		(low) 1	2	3	(high) 4	Totals
Proposition 7. Impetus for change is from outside.	(outside) 1	1	7	2	0	10
	(inside) 2	11	14	13	2	40
	Totals	12	21	15	2	50

TABLE LXV

Property 6. Feedback process.

		(low) 1	2	3	(high) 4	Totals
Proposition 8. Change related to intensity of supra-system stimulus.	(low) 1	5	6	3	0	14
	2	4	12	8	1	25
	3	3	2	4	0	9
	(high) 4	0	1	0	1	2
	Totals	12	21	15	2	50

EXHIBIT L (continued)

TABLE LXVI

Property 7. Progressive segregation.

		(low) 1	2	3	(high) 4	Totals
Proposition 1. Hierarchy inhibits change.	(high) 1	0	0	1	0	1
	2	0	3	8	0	11
	3	3	6	12	1	22
	(low) 4	2	5	9	0	16
	Totals	5	14	30	1	50

TABLE LXVII

Property 7. Progressive segregation.

		(low) 1	2	3	(high) 4	Totals
Proposition 2. Interplay of sub-systems inhibits change.	(high) 1	0	1	0	0	1
	2	2	5	1	0	8
	3	2	7	20	0	29
	(low) 4	1	1	9	1	12
	Totals	5	14	30	1	50

EXHIBIT L (continued)

TABLE LXXI

Property 7. Progressive segregation.

		(low)			(high)	
		1	2	3	4	Totals
Proposition 7. Impetus for change is from outside.	(outside) 1	2	4	4	0	10
	(inside) 2	3	10	26	1	40
	Totals	5	14	30	1	50

TABLE LXXII

Property 7. Progressive segregation.

		(low)			(high)	
		1	2	3	4	Totals
Proposition 8. Change related to intensity of supra-system stimulus.	(low) 1	2	5	7	0	14
	2	1	8	15	1	25
	3	1	1	7	0	9
	(high) 4	1	0	1	0	2
	Totals	5	14	30	1	50

EXHIBIT L (continued)

TABLE LXVIII

Property 7. Progressive segregation.

		(low) 1	2	3	(high) 4	Totals
Proposition 3. Change tends to occur from top down.	(top) 1	3	9	12	0	24
	(bottom) 2	2	5	18	1	26
	Totals	5	14	30	1	50

TABLE LXIX

Property 7. Progressive segregation.

		(low) 1	2	3	(high) 4	Totals
Proposition 5. Innovations inversely proportional to tenure.	(short) 1	2	5	7	0	14
	2	0	4	7	1	12
	(long) 3	3	5	16	0	24
	Totals	5	14	30	1	50

TABLE LXXX

Property 7. Progressive segregation.

		(low) 1	2	3	(high) 4	Totals
Proposition 6. Outside superintendent aids change.	(outside) 1	3	12	23	1	39
	(inside) 2	2	2	7	0	11
	Totals	5	14	30	1	50